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Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

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Executive Director's Message

Slow But Steady Progress

This past fiscal year began on July 1, 1989, amid a very active fishing and boating season. All reliable indicators show that it was the most active fishing and boating year ever in Pennsylvania. Fishing and boating interest continued to grow, and the impact of fishing and boating activities on many facets of the Commonwealth's economy became even more apparent.

On July 17, 1989, the Pennsylvania Fish Commission met for the 187th time and elected David Coe president, and William Sabatose vice president, to guide the Commission during this past 12-month period. Steady improvement was made in many program areas.

Many of the Commission's staff and programs won important honors. These include: *Pennsylvania Angler* staff for "Conservation Communicator of the Year" (Pennsylvania Wildlife Federation); *Boat Pennsylvania* staff for the National Water Safety Congress Regional Award; Keystone Aquatic Resource Education Program for "Best Aquatic Education Program in the U. S." (American League of Anglers and Boaters); Cooperative Nursery Program for First Place, "Take Pride in Pennsylvania Program" and mention in "Take Pride in America Program"; the Commission's fish culture system, and "Fish-for-Free Day" promotional efforts for Hall of Fame Status (Sport Fishing Institute). In addition, Bureau of Boating staffer Cheryl Kimerline Hornung won the Captain Fred E. Lawton Boating Safety Award, a prestigious national honor.

Several major development and acquisition projects took important steps forward. These include: Conowingo Dam fish lift on the Susquehanna River, where construction was implemented; Lehigh River fishways, for which funding was provided by Governor Robert P. Casey; Northeast Access Area, Lake Erie, where construction of a 440-boat marina began and where an appurtenance was implemented by a private contractor on Commission lands; Elk Creek Marina site, Lake Erie, where the Commission successfully negotiated a purchase option for 57 acres of land for a future marina-access site; and Harrisburg headquarters, where the first level and portions of the second and third floors were renovated to provide adequate employee work stations.

Other important steps taken during this period include the establishment of an employee recognition program and the acknowledgement of six employees for outstanding performance, and assignment of a resource planner to implement and conduct agency planning.

Last November, the entire Commission and boating public were saddened by the death of Commissioner Joan Plumly. Joan was a dedicated public servant who held a special place in the hearts of the staff and people whom she served. Her presence is profoundly missed.

On January 22, 1990, the Commission met for the first time in the headquarters building and took action on a vital issue—implementation of a trout/salmon permit system on January 1, 1991. The vote was 9-0 in favor and marked the start of a series of efforts to select an artist and contractor to prepare the stamps and implement the new program.

In April, I was elected president of the Northeast Conservation Directors for a one-year term, thereby giving me a unique opportunity to strengthen Commission programs through better communication and exchanges of information with directors of the other 12 northeastern states, regional federal agencies and Canadian provinces.

Throughout last spring, the staff spent many hours developing a 10-year plan for upgrading the Commission's 17 fish culture stations. The statewide project will use federal funding assistance and provide a systematic approach to solving the environmental and operational deficiencies of our current system.

In June, more sad news came to the Commission and the residents of Pennsylvania with word of the death of Ralph W. Abele. Ralph served the anglers, boaters and citizens of Pennsylvania with great distinction for more than 15 years as the Commission's executive director, and his positive impact on our aquatic resources will be enjoyed by many for decades.

The 1989-90 fiscal year provided many achievements and set the stage for future steps forward. Under the leadership of President David Coe and Vice President William Sabatose, we moved into the decade of the 1990s with considerable optimism and the realization that many challenges face Pennsylvania's fishing and boating programs. We must continue to use our human and physical resources effectively, while developing new ways to meet program goals. With your help, we will succeed.

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

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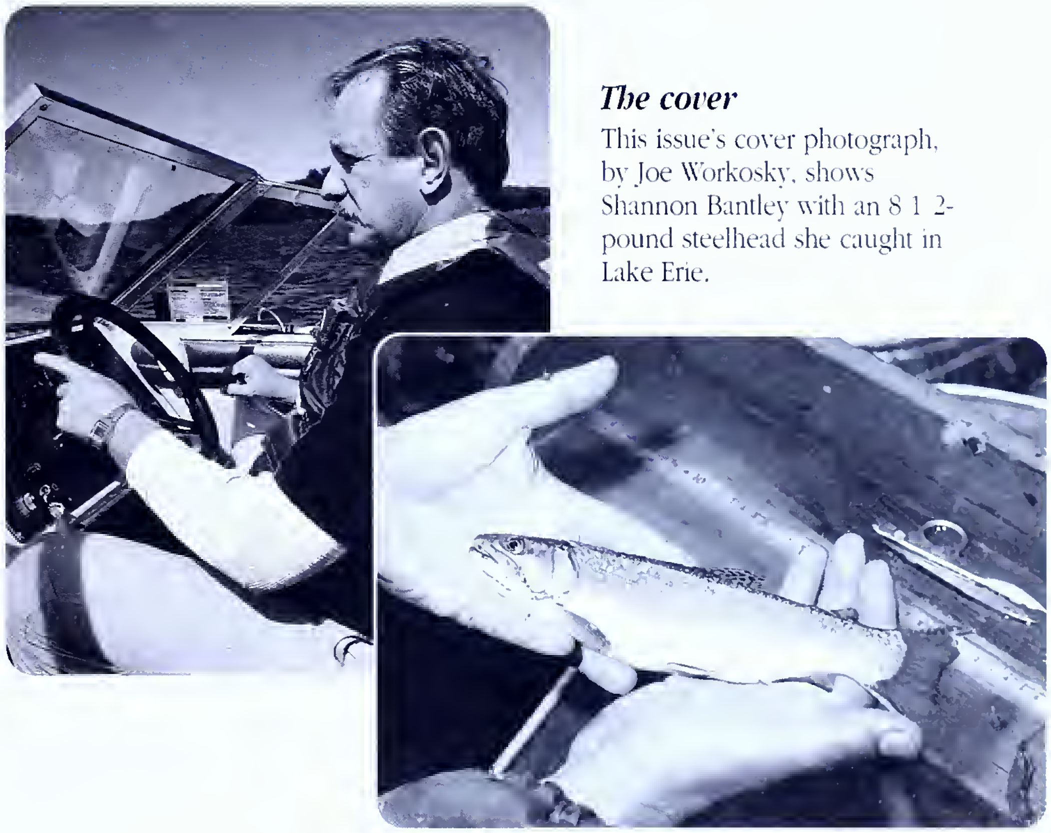

The cover

This issue's cover photograph, by Joe Workosky, shows Shannon Bantley with an 8 1 2-pound steelhead she caught in Lake Erie.

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Bureau of Education & Information

The Bureau of Education & Information employs 15 people to carry out its many different functions, which include educating and informing people about the fishing and boating opportunities in Pennsylvania and the importance of taking care of our lakes, rivers and streams. A volunteer corps of 20 people helps carry out the bureau's mission.

To reach anglers and boaters, the bureau publishes two magazines, produces statewide news releases and radio programs, provides numerous publications and sponsors an Angler Recognition Program. To educate all citizens about the importance of our aquatic resources, the bureau sponsors the Keystone Aquatic Resource Education (KARE) program, a youth program called PLAY (Pennsylvania League of Angling Youth), visitor center exhibits and special events such as "Day at a Hatchery" and "Day at a Lake."

Pennsylvania Angler

Pennsylvania Angler, in its 59th year of publication, is still one of the most visible public information efforts of the Fish Commission. It is the primary source for fishermen to learn more about their sport, discover where to seek out their favorite species, keep abreast of Commission actions and just enjoy reading about fishing. An angler survey was printed in the September 1989 issue to determine the interests and backgrounds of subscribers.

Pennsylvania Angler was recognized for its role in environmental communications when the magazine received the "Communicator of the Year" award from the Pennsylvania Wildlife Federation.

Boat Pennsylvania

For those who enjoy boating, *Boat Pennsylvania* had something of interest for everyone, no matter which kind of boating they did. Feature articles ranged from canoeing to large powerboating, and everything in between. Articles covered how-to, where-to, safety and other subjects of interest to boating enthusiasts.

Education

The Commission's Keystone Aquatic Resource Education program received national attention in 1990 when it was presented an Award of Excellence by the American League of Anglers and Boaters. The first-time award, presented in Washington, DC, in June, recognized the program as one of the best of its kind in the nation.

The real test of its worth, however, was how it was received by Pennsylvania teachers. In 1990, the first full year that teacher training workshops were offered, 500 teachers participated in 15-hour workshops and received the materials offered in the KARE program. The teachers were pleased with their training and anxious to use the materials and activities with their students. A core group of 33 facilitators helped train teachers statewide, and another 15 facilitators were recruited later in the year. Their dedication and enthusiasm made it possible to reach so many teachers and students.

A newsletter called *Karegiver* was published for the first time this past year. It was mailed to everyone who attended workshops to keep them informed of new materials, pass on teaching tips and share the ideas of those using KARE materials.

CARE ABOUT CLEAN WATER

kare

Keystone Aquatic Resource Education

PENNSYLVANIA FISH COMMISSION

During the summer of 1990, the Commission piloted an urban fishing education program in Pittsburgh (see sidebar). Besides having a chance to go fishing, urban youth were taught how to be responsible, safe anglers. They learned about fish, about the importance of water quality and about good fishing manners.

The Volunteer E&I Corps conducted hundreds of programs throughout the year and operated the Fish Commission station at the state Envirothon. They continued, on their own time, to provide quality programs for the public.

Media relations

The Fish Commission almost always has positive press coverage, in part because we take the time to answer questions and deal with the press on a one-on-one basis. The 1990 trout kit was popular with the print media and helped them cover trout season. Big news items in 1990 were the trout/salmon stamp and boating accidents.

The inseason trout stocking lists were as popular as ever, with the public now paying $1 to cover handling and mailing. Phone calls to the Harrisburg office have increased greatly with questions from both the public and the press.

Broadcasting

Many anglers have listened for years to the weekly radio programs of the Fish Commission. This year they covered subjects on fish and fishing, boating, amphibians and reptiles, environmental concerns about water and other subjects of interest to anglers and boaters. The programs continued to be a handy digest of information pertinent to the season.

Publications

The *Guide to Public Fishing Waters and Boating Access* was a popular publication in 1990. It combined a lot of information into a $2 booklet to inform anglers and boaters where to go and how to reach access areas, which species to find, which facilities were available at accesses and what horsepower was allowed on various bodies of water.

Two more fishing guides, on trout and salmon, were published. A Lake Erie brochure was popular in the northwest and a zebra mussel brochure was also distributed widely throughout that region. The fish identification book was vastly revised and expanded to include about three times as many species along with a key and natural history information to aid in identifying the fish. This book should be useful to anglers, students and educators.

Work was completed on the amphibians and reptiles book, a cooperative effort with the Wild Resource Conservation Fund. Publication should be early 1991.

Graphic services

The graphic designer continued to increase efficiency with computer technology. The magazines and many publications were converted to being typeset and designed completely on a MacIntosh computer. This saves both time and money. More pamphlets, brochures and flyers were designed and printed inhouse. The workload on this section was particularly heavy in 1990 with several new publications completed plus work on the American Fisheries Society conference and the Commission 125th anniversary.

Fulfillment

Fulfillment staff handled subscriptions for *Pennsylvania Angler* and *Boat Pennsylvania*, sent out PLAY packets and thousands of orders for publications and promotional items, processed Angler Recognition applications and mailed out awards, which included new state records. They staffed the Harrisburg office's front window where licenses were sold, literature distributed and questions answered.

Public relations

Two major events were held in 1990. "Day at a Hatchery" was an open house at the Linesville Fish Culture Station and attracted several thousand people to see fish eggs taken, lake survey demonstrations, fish filleting and cooking, and various exhibits.

"Day at a Lake" was held in the northeast part of the state at Beltzville State Park in conjunction with Fish-for-Free Weekend. Fishing, boating and environmental issues were discussed, displayed and demonstrated. The youngsters enjoyed the "Draw a Fish" booth. Numerous environmental and boating safety organizations also participated with displays and literature.

Much work was done in 1990 in preparation for the Commission's 125th anniversary in 1991. A 1991 anniversary calendar was printed along with commemorative items such as a wooden fish plug, ball cap and decal to observe 125 years of service. Not many agencies can boast of such a long and proud heritage.

Cheryl Riley

Urban Fishing and Education Program

"Wow, I thought we were just going to use cane poles. These are neat."

"I got one, I got one!"

"The fish ate my worm."

These are just some of the comments from children who participated last summer in the Commission's Urban Fishing and Education Program. Group leaders and parents who participated in the program were equally excited. They called the program "very worthwhile" and "a must for children." One also said, "The state and city should be commended for offering this program to inner city kids."

Some 321 children participated in this pilot program, held at Lake Carnegie in Pittsburgh. It was run in conjunction with the city of Pittsburgh and lasted for six weeks. The children learned about habitats and lifecycles. Finally, the children fished for bluegills, crappies and catfish that they had helped stock earlier. The program was a success with many of the children asking, "When can we come back?"

Bureau of Property & Facilities Management

Division of Property Services

The Property Services Division is comprised of three sections: Real Estate, Adopt-a-Stream and Survey. Division activities include a wide variety of land- and water-related services.

Adopt-a-Stream Section

During the 1989-90 season, the Adopt-a-Stream Section approved 185 project applications—150 streams and 35 lakes.

Approved projects consisted of eight new lake projects and 20 new stream projects, as well as the approval and processing of six requests for technical guidance for fish enhancement projects.

There are 179 projects that continued from the 1989 season.

Thirty-three of the 35 lake projects were fish habitat-related work. Over 85 fish habitat improvement projects were planned or continuing in adopted streams.

Three aquatic stream surveys of adopted waters were completed.

Thirty-five educational programs were presented to various youth and adult groups, which included electrofishing demonstrations.

A proposed general permit was co-authored with the Soil Conservation Service and is to be used by DER for permanent livestock crossings in streams.

A new *Trout Stream Habitat Improvement Guide*, due to be published in 1991, was prepared.

The preparation of a *Lake Habitat Improvement and Stream Corridor Management Guide* has begun.

The staff attended and participated in numerous meetings with other state and federal agencies to discuss and prepare a manual on streamside fencing and stream corridor management.

The staff participated for the first time in the activities comprising the widely acclaimed

Ag Progress Days at Penn State University. A demonstration site for livestock stream crossings was constructed on University property and an information booth and display were erected and staffed throughout the week.

Seventeen construction days were supervised by the staff, resulting in the placement of over 300 porcupine brush cribs in adopted impoundments.

Thirty stream construction days were supervised, with over 40 structures completed by the cooperators.

Due to high flows in the 1989-90 season, stream construction was down.

Real Estate Section

The Real Estate Section acquires land rights for fishing and boating access to the public waters of the Commonwealth, and for administrative purposes. It is also responsible for handling activities and problems relating to boundaries, encroachments, special land uses, and cooperative land uses. The 1989-90 year included numerous efforts in all the areas.

Survey Section

The Survey Section serves all divisions throughout the Bureau of Property and Facilities Management.

Surveys for the Real Estate Section are for possible acquisition of new property, resurveys (for possible encroachments), and for new or renewed lease lines.

A large percentage of survey work is done for the Engineering and Technical Services Division and the Construction and Maintenance Division—surveys for new design (topographical), construction and building stake-outs, location of sewer and utility lines, and as-built surveys after construction.

This section also works with the dam safety program—staking and locating core drill holes and surveying for new spillway and drain designs.

> The access area system consists of more than 250 developed properties throughout the state.

Divisions of Engineering & Technical Services and Construction & Maintenance Services

The work of the divisions of Engineering & Technical Services and Construction & Maintenance Services is interrelated and therefore described as a combined report. During this fiscal year their dedicated work forces of skilled engineering, construction and maintenance personnel continued to carry out a major share of the Fish Commission's program to promote and provide for safe public use of recreational waters. The responsibilities toward that program and many other related activities include the development and maintenance of access areas, lakes, hatcheries, and administrative facilities; the improvement and restoration of fish migration and water quality; and furnishing engineering and technical services for other Fish Commission activities, local governments and sportsmen's groups.

The access area system consists of over 250 developed properties throughout the state. The following are the most notable projects undertaken during the 1989 fiscal year.

Marietta Access, Susquehanna River, Lancaster County: Completed the construction of and opened to public use this new facility consisting of a paved access road, parking lot and concrete plank surfaced motorboat launching ramp.

South Pottstown Access, Schuylkill River, Chester County: Completed design, materials procurement, securing local, state and federal permits and began construction of parking and motorboat launching facilities.

Lake LeBoeuf Access, Erie County: Completed engineering design and began process of securing local, state and federal permits to expand and improve the existing parking lot and boat launching ramp.

Walnut Creek Access, Lake Erie, Erie County: Performed annual springtime dredging of small boat channel between the lake and mooring basin and removed a five-year accumulation of debris from the basin.

Frankford Arsenal Access, Delaware River, Philadelphia County: Replaced wood pilings for floating dock system. The last time this had to be done was five years ago. Repaired light fixtures, replaced lamps and adjusted time clock to achieve power use savings.

Proposed Kilbuck Access, Ohio River, Allegheny County: Completed 31-month process of archaeological investigation in compliance with the National Historic Preservation Act and began process of securing balance of local, state and federal permits to construct access road, parking and motorboat launching facilities.

Prospective access development projects: Clarion University archaeologists continued for a second year an investigation of the potential archaeological significance of 20 proposed project sights.

Kettle Creek Stream Improvement Project, Potter County: Placed 390 tons of riprap to construct a stream diversion channel block.

The following are some of the projects, both large and small, performed for the Fish Commission's hatchery facilities.

Bellefonte Fish Culture Station, Centre County: For shad pond system installed drainage line. Constructed frame addition to garage building. Repaired and installed rewound 20 H.P. mid-point aerator motor. Repaired 40 H.P. head aerator pump and mid-point aerator pump. Conducted field survey and began preliminary layout of proposed waste treatment facilities renovations and additional concrete raceways. Cut in and installed nine air conditioners in Stackhouse School sleeping quarters.

Benner Spring Fish Culture Station, Centre County: Installed new relay on pump motor drive in hatch house. Continued study of proposed heat pump installation. Began construction of aerator cover.

Big Spring Fish Culture Station, Cumberland County: Repaired line starter panel on sewage pump. Installed electrical heater and miscellaneous items. Installed plumbing under concrete floor in new employee room. Conducted engineering investigation of clarifier malfunctions.

Corry Fish Culture Station, Erie County: Installed paving and regraded drainage ditch to keep water away from paving. Constructed housing and installed standby generator system in it. Removed gravel sediment from Spensers Run and paved hatchery road with the material. Completed rerouting of drainage system as part of emergency measures to improve treatment of fish waste and overtopping water. Began preparation of sludge disposal site permit. Prepared specifications and ordered materials for feed bin control panel and feeder.

Fairview Fish Culture Station, Erie County: Prepared layout drawings for proposed expansion of administration building to house Lake Erie Research Unit. Completed design and specifications for contract installation of fence around Godfrey Run Unit.

Bureau of Education & Information

Art Michaels

The Commission's "Day at a Lake" took place last June at Beltzville State Park. Volunteer E&I Corpsman Godfrey Studenmund (above) helps a young angler, while (right) Bureau of E&I staffers (left to right) Charlene Glisan, Patti Copp and Eleanor Mutch work the publications booth.

Art Michaels

Kelly Countouris

Two major events were held—"Day at a Hatchery" was an open house last March at the Linesville Fish Culture Station that attracted several thousand people. "Day at a Lake," at Beltzville State Park, Carbon County, occurred in conjunction with Fish-for-Free Weekend in June.

Bureau of Education & Information

Art Michaels

Ted Walke (above), Commission Graphic Services Section chief, checks a publication's design before printing. John Jones (right), offset press operator, prints a Fish Commission publication.

Art Michaels

The magazines and many publications were converted to being typeset and designed on a computer. More pamphlets, brochures and flyers were designed and printed inhouse. This saves time and money.

Linda L. Steiner

Don Carey

Huntsdale Fish Culture Station, Cumberland County: Installed synthetic pond liner. Specified and ordered replacement for a series motor and pump. Prepared specification, drawings and materials order for a standby generator system. Completed design and specifications for contract installation of security fencing.

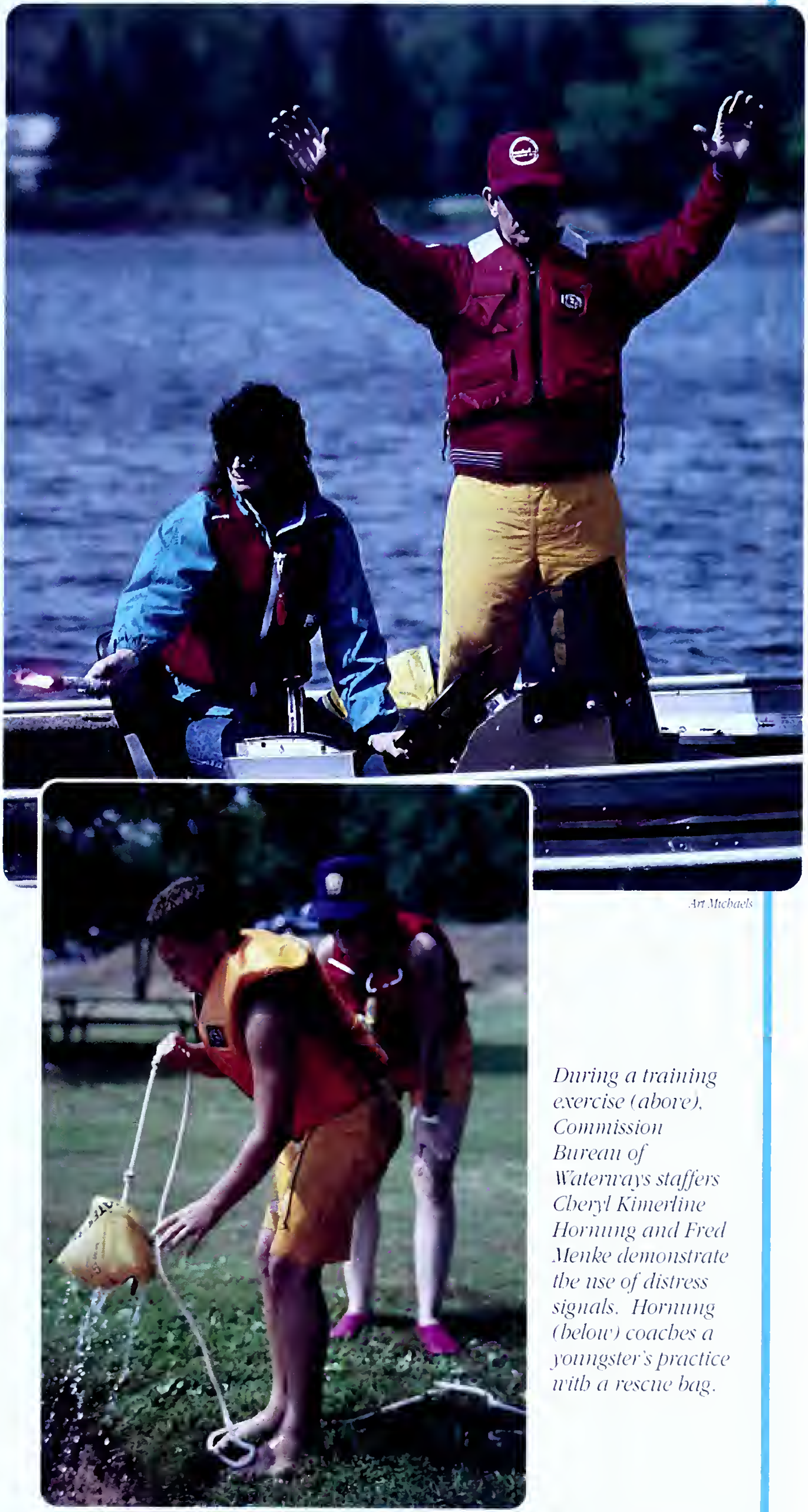
Linesville Fish Culture Station, Crawford County: Reroofed administration building. Rehabilitated well no. 2. Completed design, construction drawings, and DER Part II Water Quality Permit Application for proposed hatch house effluent treatment system. Completed design of proposed containment facility in chemical storage room. Completed application for sludge disposal site permit. Designed silo decking and raceway covers for installation by PCC personnel.

Oswayo Fish Culture Station, Potter County: Prepared specifications, procured and installed a standby generator system capable of powering the whole station. Contracted the overhaul of pumps. Designed installation of a proposed 2,000-gallon tank for both standby generator and stocking truck fuel supply. Prepared specifications and materials order for feed bin control panels.

Pleasant Gap Fish Culture Station, Centre County: Installed water line for old and new superintendent's dwelling. Removed storm-damaged trees and assisted railroad workers on PFC road crossing. Installed water line to shop building. Installed new computer line in headquarters building. Began site preparation, installation of erosion control devices, and construction of outfall structures, primary clarifier, and settlement pond for new fish production wastewater treatment facility. Completed driveway and landscaping for new superintendent's dwelling. *Tylersville Unit:* Completed exploration for proposed water supply well, inspected and ordered heating systems equipment. *Shop work:* During inclement weather manufactured precast concrete planks for boat ramps. Repaired construction and maintenance equipment. Made bulletin boards, typewriter stands, computer tables, installed insulation in buildings, remodeled various Harrisburg headquarters offices, and installed a variety of cabinetwork in offices and visitor centers.

Pleasant Mount Fish Culture Station, Wayne County: Designed and constructed a pavilion containing a fish-viewing tank. Completed design and specifications for contract installation of security fencing. Repaired inlet leaks on aerator control structure. Secured necessary permits and reconstructed fish catch basin and emergency spillway at Hankins Pond.

Bureau of Boating



Art Michaels

Dan Martin

During a training exercise (above), Commission Bureau of Waterways staffers Cheryl Kimerline Hornung and Fred Menke demonstrate the use of distress signals. Hornung (below) coaches a youngster's practice with a rescue bag.

Reynoldsdale Fish Culture Station, Bedford County: Completed contract repair of visitor center roof. Removed old and installed new windows and frames in hatch house. Updated fuel tank installation to comply with new code.

Tionesta Fish Culture Station, Forest County: Completed construction of multi-purpose building. Continued design of improvements to station domestic waste handling system. Completed contract rehabilitation of well no. 3 and pump replacement and rehabilitation of well no. 2. Began design and drawings for proposed foremen's dwelling. Completed application for sludge disposal and site permit. Began design of sludge storage building. Prepared specifications, drawings and materials order for standby generator capable of powering the Tubbs Run Unit, the existing hatch house and the multi-purpose building.

Union City Fish Culture Station, Erie County: Installed new electrical panels, meter base and controls for standby generator. Reconstructed bulkhead and removed sludge from Brown's Pond.

Van Dyke Fish Culture Station, Juniata County: Designed and constructed new boiler building and heated water system for fish-rearing tanks.

Pennsylvania Conservation Corps (PCC) Program: By means of this Commonwealth program the Fish Commission furnished on-the-job training to 14 economically disadvantaged youth, ages 18 to 24. The PCC trainees were given hands-on work experience by skilled construction trades personnel. The program was conducted at two locations, the Linesville and Oswayo Fish Culture stations. Some of the work accomplished consisted of the fabrication and erection of raceway covers to prevent bird predation, and the construction of silo decking.

In compliance with the National Dam Safety Act, annual inspections were completed and reported for the 29 manmade lakes the Fish Commission controls.

The maintenance of the Fish Commission's statewide system of public use facilities continued to be performed by five regionally headquartered maintenance crews. Typical structures attended to included dams, canals, aqueducts, stream channels, vehicular bridges, footbridges, roads, trails, parking lots, lawns, landscaping, stream and lake habitat devices, and fish ladders. This year as in the past, the maintenance crews also assisted in the construction of new access facilities, repairing hatchery ponds, stocking trout, upkeep of hatchery and regional law enforcement buildings and grounds, lake weed control, and drawdown of lakes for fish management purposes.

Bureau of Boating

Administration

Fiscal year 1990 has been busy and fruitful. The Boating Advisory Board met many times to consider boating regulations and solutions to the many problems that confront recreational boating in the Commonwealth. The burgeoning population of personal watercraft has created problems both real and imagined. Regulations controlling boat liveries were enacted. The administration of the boat registration system was helped through the approval of a two-year registration cycle. Noise is again becoming a major source of complaint.

Perhaps the most controversial regulation proposal was one that would require registration of all boats using Fish Commission boat launch sites.

We continued our efforts to have legislation passed that would raise registration fees for motorboats. These fees have not increased since first instituted in 1963. Operating on such an antiquated fee structure has hampered the Commission's ability to address adequately the many issues that it faces today. Boaters are asking for additional access and more safety education. Everywhere boaters are calling for more law enforcement to help control the increased number of boaters. None of this can happen with fees that do not reflect the current economic conditions. While we were not successful this year we will continue to address our funding needs in coming years. An adequate funding base is essential for the provision of all basic boating services of the Commission.

Boat Registration Division

In November 1989, 300,000 boat renewal notices were mailed to the boating public. By the first day of trout season, over 228,000 (77 percent) had been returned and processed. Eighty-six percent of boat renewals were processed through the optical scanner, which allows the processing and returning of renewals in a timely manner. Additional seasonal personnel were employed to handle the incoming boat renewals. With the help of technology and additional personnel, the process of renewal was handled without an unmanageable backlog. Most renewals were processed and mailed out within one week of receipt.

The collection of sales tax continues at an increasing rate. Some $3.9 million in taxes on the purchase of boats, motors and related equipment was collected. As an agent of the Department of Revenue, the Fish Commission receives a one percent agent fee for collecting this tax. The interest that accrues while the money is awaiting transfer is also credited to the Boat Fund.

Cooperative efforts between this office and the Department's Watercraft Division has resulted in increased collection of sales tax from people who would have avoided tax because of previous ineffective record-keeping.

In March, the Commission began to deposit its checks directly in a local branch bank rather than processing through the Department of Revenue. We bought a check encoding and endorsing machine and began to deposit all processed checks on the day of processing. This new equipment encodes and endorses checks in one pass. It eliminates the need for much handling of checks and creates an improved audit trail.

Once again Allegheny County leads the state in the total number of registered boats with over 28,000 boats, or 11 percent, of the total number of registered boats in the state. In the past 10 years the number of registered boats has increased 52 percent. Registration fees remain the same $4 and $6 established in 1963.

Much planning had to go into preparing for the turnover to a two-year registration cycle. Staff was working on new forms, validation decals, procedures and computer programming that was necessary before conversion. In the first year of implementation, half the number of registered boat owners will receive one-year registrations and the other half, two-year registrations. In the 1992 registration year, all boats will be registered for two years. These changes will also result in increased savings in postage and supplies.

Russ Gellig

Boating Safety and Education Division

The Commission's middle and high school level Boating and Water Safety Awareness Program continued to grow in 1990. Interest in the program has blossomed as a result of promotional efforts. This year the emphasis has been to expand this equipment-intensive program into camps and clubs. Twelve instructor workshops throughout the year increased the number of current instructors to 270.

These instructors set up programs through 20 schools and 42 conservation clubs, scout clubs, youth groups and other organizations. Instructors taught over 2,300 students in the Basic Boating and Water Awareness Program. The goal of this program is to instill in youth the knowledge, skills and common sense that can make safer boaters in the years to come.

The Water Rescue Program, developed in response to a need for training by water emergency personnel, continues to grow in popularity. Three statewide ice rescue conferences and one statewide water rescue conference were conducted. Some 38 instructors certified more than 1200 students in water rescue.

"Your life jacket won't let you d(r)own" was the copy for 100 billboard messages across the state targeting sportsmen to wear life jackets when boating. Over 375,000 brochures were distributed to support the Commission's program to improve boating safety. A new brochure, *Water Skiing in PA*, was developed for Pennsylvania's power-boaters. Several other brochures including *Survival in Cold Water* and *I Just Bought A Boat, Now What Do I Do?* underwent major revision.

The Commission continued to improve its liaison with the three U.S. Coast Guard Auxiliary districts with flotillas located in Pennsylvania. Throughout the Commonwealth, hard-working Auxiliary volunteers have responded to Commission requests for help on inland and regatta safety patrols, aids to navigation, courtesy marine examinations, special projects, and education. The Commission in turn helps the Auxiliary by providing brochures for boating education classes.

Volunteer instructors and student interns were again important to the success of the Boating Safety Education Program. Volunteers taught Boating and Water Safety Awareness courses and Water Rescue Programs, revised publications and manned displays. They contributed over 2,000 hours of service. Two seasonal boating education specialists were hired to meet the steadily increasing demand for boating education.

Boating accidents

Boating fatalities increased in Pennsylvania in 1990. There were 16 accidents that resulted in 22 fatalities, an increase of nine fatalities over 1989. Of these victims, 15 were in unpowered boats, four were in canoes and six were in rowboats. It was an especially bad year on Lake Erie with a total of five fatal accidents resulting in eight fatalities. Of this year's 110 recreational boating accidents, 76 resulted in injuries requiring medical treatment. Capsizing in a small unpowered boat continues to be the leading cause of fatalities.

Aids to navigation

As the number of boats on our waterways continues to increase, more emphasis is put on the awareness of floating aids and their messages. The Commission again placed over 1,400 aids to navigation across the state. Responsibility for installing, tracking and maintaining these aids is handled by the Commission in cooperation with other agencies such as the Department of Environmental Resources and the U.S. Army Corps of Engineers. The Commission regulates roughly 280 private aids to navigation. The U.S. Coast Guard Auxiliary helped the Commission in aids to navigation verification by checking the placement of aids during their operational patrols.

All mono-hull boats under 20 feet in length must now have capacity plates. Seven thousand plates were issued in 1990 as boaters comply with the new regulation. Accurate capacity and horsepower information is an essential to decrease accidents by making boaters aware of the limits of their craft.

Information systems

One thinks of the Fish Commission as a dedicated group of people committed to improve and maintain Pennsylvania's water resources for the fishing and boating public. While this is true, the Commission has many business-oriented needs that are necessary to accomplish this purpose. The Information Systems Division plays an important roll in the operation of the Commission by providing the automated technology resources and services that satisfy the Commission's many business needs. During the past year, the computer systems operated by the Information Systems Division processed over 285,000 boat registrations. A combined total of over 57,000 subscriptions to *Pennsylvania Angler*, *Boat Pennsylvania*, and PLAY were successfully handled and accounted for by the Fish Commission's computers. Additionally, over 1.1 million fishing licenses were consigned, allocated, distributed, and accounted for by the computer system. Also, more than 10,000 prosecution records and over 450 pollution cases were tracked via Fish Commission computer equipment.

Magazine subscribers have noticed a big difference in the processing of their subscriptions. The Fish Commission began using an optical scanner to renew subscriptions during the year. This new process allows for the capture of information via the optical scanner. Magnetic tape is used to transfer the information for processing by the computer system. The use of this device has reduced the number of transactions that must be done manually. This not only alleviates much intensive work for the Commission's staff, but it also further reduces the amount of time a subscriber must wait for the renewal. This type of technology has already been in use by the Commission for a year to renew boat registrations. Such technology has proven cost effective for the Commission.

A computerized system was developed by division staff to track the various special permits issued by the Commission. The licensing of bait propagators, bait dealers, and fish transporters and licensing regulated fishing lakes is now automated. The system saves many man hours each year besides providing the benefits of computer speed, accuracy, and control.

Modifications and enhancements were made to the Commission's Law Enforcement System to provide Law Enforcement management with additional features such as the ability to identify repeat offenders. The Boat Registration System was modified to include additional inquiry capabilities, and to provide for automated production of capacity plates. A much quicker turnaround time to service a request for a capacity plate has resulted. During the year, microcomputer-based systems were developed to track several items previously handled manually. Such items as Passengers for Hire Operators, Passengers for Hire Vessels, Capacity Plates for Unregistered Boats, and Permits for Floating Objects are now recorded, tracked, and analyzed using microcomputer technology.

The Information Systems Division has acquired hardware to allow Commission microcomputer users to share peripheral devices, thus saving many dollars by minimizing the number of peripheral devices required. An experiment was started during the year to determine if portable microcomputers have application to law enforcement field activities. This experiment will be monitored and analyzed throughout the year, and if determined to be effective, will be expanded during the new year. Communication equipment was also acquired to provide better remote computing capabilities for Commission computer system users.

The Information Systems Division is involved in many business aspects of the Commission. The dedicated staff that comprises the division will continue to satisfy the Commission's business and automated technology needs as legislation and technology changes, or as new needs arise.

Art Michaels

Baits, Bytes, Boats and More

Fish Commission computer systems play a major role in all aspects of Commission operations. Computer systems handle the allocation, distribution and accounting of fishing licenses for Pennsylvania anglers. Sales of these licenses are the revenue backbone of the Commission. Modern computer technology and systems also provide for the registration of boats in Pennsylvania. Computer technology handles the distribution of the two Commission magazines, *Boat Pennsylvania* and *Pennsylvania Angler*, as well as tracking law enforcement information and statistics. Computers also provide for a variety of other general business activities.

With the rapidly changing environment in computer technology, the Commission's Information Systems Division is constantly striving to develop new applications to satisfy Commission needs, provide for changing legislation, improve existing systems to make them more efficient, and provide features to increase productivity. The Information Systems Division strives to give superior information services while keeping transaction costs low.

Bureau of Law Enforcement

During the report period the Bureau had another retirement, which brought the total number of vacant conservation officer districts to five. As this report appears in this issue we will be close to graduating new officers from our training school.

These new officers were selected through the Civil Service process, which began in October 1989 when the announcement was made for the hiring process. Those applying were required to take a written exam. Those scoring the highest were then required to take an oral exam. The two test scores were combined and we were provided with an eligibility list by the Civil Service Commission. The top candidates were then subjected to further scrutiny and testing including background checks, in-home interviews, a physical, and agility and swim tests. After this testing, final selection was made and the new Waterways Conservation Officers (WCOs) were scheduled to attend a comprehensive training course at the Pennsylvania State Police Academy and the Fish Commission's School of Fisheries, Conservation and Watercraft Safety. On completion of this extensive training, they will be assigned to locations throughout the Commonwealth.

These new officers will help alleviate our personnel shortage. Unfortunately, we will still not be able to meet all the demands and requests of the angling and boating public because participation in these activities continues to grow.

House Bill 650 was signed into law by the governor (effective January 1, 1990). This legislation provided amendments to the Fish and Boat Code including increased penalties for various infractions such as fishing without a license, littering, misuse of Commission property, sale of fish, pollutions, disturbance of waterways, boating under the influence and other sections. It also added a number of new sections regarding fleeing or attempting to flee or elude an officer, giving false identification or fraudulent statements, repeat offenders, retrieval and disposition of fish, tagged fish and various other editorial changes. These amendments to the Code should provide some deterrent to potential violators as well as give the officers additional "working tools."

To assist officers in their work and keep them proficient, we continued with our in-service training program. Training was provided to deputy waterways conservation officers (DWCOs) as well as salaried staff. Deputy training included a basic course for all new appointments, an advanced training course, special workshops dealing with boating under the influence detection and enforcement, and CPR and firearms recertifications. WCOs were also recertified in CPR and firearms and attended a variety of general and specialized training on boating, pollutions, wetlands and self-defense. Officer training has paid and continues to pay dividends for the agency and the public as officers continue to assist many people using their first aid, CPR and boat safety training to save lives each year and other training to assist and inform anglers and boaters in many other areas.

Bureau personnel remain dedicated to preserving water quality in the Commonwealth. This has been accomplished in a number of different ways, including investigations and prosecutions involving water pollution and stream disturbance cases, and reviews of encroachment and mine drainage applications. Pollution/stream disturbance cases are detected in a variety of ways such as through routine patrols and calls from other agencies and concerned citizens. Conservation officers respond as soon as possible and conduct a thorough investigation, gathering all available evidence and interviewing any witnesses who may have information regarding the incident. After reviewing all evidence, the officer makes a decision regarding whether to prosecute or not and meets with the person(s) alleged to have committed the violation and a settlement is reached and/or the officer files the proper documents to initiate court action.

Through these actions, the Fish Commission continues to resolve many pollution/disturbance cases. Much assistance was received from other agencies such as the Department of Environmental Resources, U.S. Fish and Wildlife Service and Army Corps of Engineers.

Reviews of encroachment and mine drainage applications in many instances have indicated potential pollution problems if work would be done as originally planned. The officers, in conjunction with our Division of Environmental Services, work with applicants to initiate changes in proposed work that quite often eliminates problems before they occur.

A total of 520 cases were investigated and 473 of those closed via warning, prosecution or not enough evidence to pursue further, with a total of $627,000 collected in fines and restitutions. Applications reviewed included 384 mine drainage and 1,465 encroachments.

In addition to their primary law enforcement duties, conservation officers performed many other duties including education and information work. They attended a total of 825 programs such as presentations on radio and TV, sport and boating shows, boating programs, fishing schools, school programs and sportsmen's club meetings. These programs and presentations have been a good way to keep the public informed on Commission programs and let anglers and boaters meet our personnel.

Conservation officers also were much involved in their routine fish and boat law enforcement as well as several special investigations. These produced over 9,000 prosecutions for infractions of the Fish and Boat Code and regulations. They issued about 30,000 warnings and boarded over 45,000 boats, two-thirds of which met legal requirements. Violations detected most frequently included: fishing without a license, littering, Commission property regulations, season/size/creel limits, short (or no) PFDs and boat not registered.

Throughout this fiscal year, emphasis was placed on boating safety and boat law enforcement. During this period, the state police provided aerial surveillance with helicopters and this added a new dimension to our patrol efforts.

Bureau of Fisheries

Division of Fisheries Management

The Division of Fisheries Management is comprised of field personnel and central office staff. The field personnel, eight area fisheries managers and their support staff of one biologist and eight technicians are assigned on a drainage-area basis. The central office staff includes two clerical personnel and a seasonal clerk typist, a technical group of specialists, a herpetology and endangered species coordinator, a coldwater unit leader and technician, and a warmwater unit leader and technician. The role of each specialty group is to coordinate management of all fisheries (including reptiles and amphibians) to conserve, protect and enhance the fishery resources and provide optimum recreational fishing to the anglers.

The bulk of the division's time was spent between two Dingell-Johnson- Wallop-Breaux Act-funded projects: Fisheries Management Project and the Technical Guidance Project.

The Fisheries Management Project is designed to collect baseline data and information necessary to manage properly Pennsylvania's diverse fisheries. The project includes documentation of the quality and quantity of Pennsylvania's fisheries, the development and implementation of management plans, the dissemination of project data to the angler, and the evaluation of management techniques (such as stocking, habitat manipulation, and size and creel limits) vital to optimum development of management plans.

A cross-section of the Commonwealth's fisheries resources received attention from management personnel. From frequent water chemistry checks to intensive fish population studies, some 150 streams and rivers from unstocked brook trout streams to most of the major rivers were worked in fiscal year 1989-90. The 40 or so reservoirs and lakes surveyed ranged in size from a small pond to Pymatuning Reservoir.

The Technical Guidance Project covers a variety of disciplines within the Commission, including fisheries management. The project is structured to provide guidance to other regulatory bodies, groups, institutions and individuals on the specific impact that their activity or the activity of others regulated by them has on the resource. It is essential that such bodies, groups, institutions and individuals (who will affect Pennsylvania's fisheries and fisheries habitat) be provided with sound technically-oriented guidance and information that will be useful in making decisions.

During the 1989-90 fiscal year, the staff performed a substantial amount of technical nursery prospective-site evaluations, river dredging, hydropower projects on numerous waters, mine reclamation, small pond management, herbiciding, fish flesh contamination, fish kill investigations and hearings, landfills, mining permit applications, priority water body surveys, adopt-a-stream applications, collecting fish for contaminant analysis, impact of erosion and sedimentation, water allocations, stream encroachments, DER water quality issues, operation of fish passage facilities, lake drawdowns, watershed land use, flood emergency projects, solid waste site development, superfund sites, manure disposal, habitat improvement and wetlands encroachments.

The Operation FUTURE Task Force continued to serve as a forum for inhouse communication on ideas for the future management of Commonwealth fishery resources. During the fiscal year, emphasis was given to initiatives for managing the Commonwealth's fisheries resources.

In addition to surveying waters and providing technical guidance on the Commonwealth's fisheries, the staff conducted or participated in numerous studies or endeavors. Mostly as part of the fisheries management DJ project, they are intended to provide additional insights into the Commonwealth's fisheries or to undertake implementation of management plans.

Fiscal year 1989-90 saw an interesting blend of activities aimed at evaluating management techniques (i.e., stocking, no-stocking, habitat manipulation, and special regulations), of assessing angler use and harvest on select waterways as well as determining angler attitudes and opinions on existing and proposed management plans.

About the resource user

Eight trout-stocked sections and one lake were studied during the trout season as the third-year effort to document angling pressure and harvest following stockings of hatchery trout over a wide cross section of Commonwealth waters. Use counts and interviews with over 11,900 trout anglers gave staff a good appreciation of the value of stocked water and the hatchery program in general.

Anglers fishing Yellow Creek Lake, Indiana County, and Tamarack Lake, Crawford County, during early 1989-90 were involved in surveys determining use, harvest and angler opinion on possible changes in bass and panfish regulations. Much of the information gained formulated support for the Big Bass Program (15-inch, four-bass daily creel limit) recommended and approved for 11 waters for implementation in January 1991. Early in the conceptualization stages of the program, specific user groups were asked to comment on the proposal and staff attended several meetings to explain the rationale and to consider user comments. In addition, bass anglers at Shenango and Lackawanna State Park lakes during June 1990 were surveyed on the proposed Big Bass Program.

During spring 1990, Commission creel clerks began counting and interviewing anglers at Conewago Lake (York County), Blue Marsh Lake (Berks County), and Lake Arthur (Butler County) as part of the evaluation of the Conservation Lake Regulations Program implemented in 1987.

Staff also spent considerable time preparing plans for assessing smallmouth bass anglers on select waters throughout the Commonwealth during late 1989-90 and early 1990-91, as well as a mail survey through *Pennsylvania Angler* to gain additional insights into opinions and support for future direction of smallmouth bass fisheries.

Staff also attended and participated in

meetings including the trout/salmon stamp public sessions to hear user comments and to address pertinent questions regarding management programs.

Another angler participation effort planned for 1990-91 involves a telephone survey of licensed anglers as an intentional undertaking to determine participation in the Commission's coldwater programs, angler satisfaction with Operation FUTURE initiatives and support for future management of the Commonwealth's coldwater resources.

About the resource

Intensive stream electrofishing occurred in June in the eight trout-stocked waters to establish levels of survival of hatchery trout during the spring season. Efforts were made to estimate survival and abundance of fall-stocked fingerling brown trout in the Little Juniata River, although high flows necessitate a repeat attempt in 1991. Several streams were evaluated as candidates for the catchable trout stocking program and others were inventoried for updating management plans. Efforts continued to evaluate stream sections managed for wild trout (no stocking) and to document the status of trout populations in uninventoried waters.

Waters in the Limestone Springs Wild Trout Program, three in the Trophy Trout Program and several in the Catch-and-Release Program were reassessed in the long-term commitment to evaluate the use of "no-kill" and other restrictive regulations in the management of Pennsylvania's renewable natural resource—wild trout.

Growth of special regulation programs in coldwater management continued. The Commission formally approved delayed-harvest, artificial-lures-only areas on Manada Creek, Dauphin County, and Neshannock Creek, Lawrence County, in addition to changing the fly-fishing-only area on Little Sandy Creek, Venango County, to a delayed-harvest, fly-fishing-only area. Staff also continued with several candidate waters for these programs for Commission action later in 1990.

Other coldwater management efforts included the assessment of brook trout populations in response to the seven-inch minimum size limit implemented in 1983, a revamping of the palomino trout stocking program, the establishment of an allocation process for hatchery brood trout, plans for summarizing data from the evaluation of various coldwater management initiatives since 1983 and the use of Seeforellen brown trout in reservoir management.

In terms of warmwater/coolwater fisheries, surveys of numerous lakes, reservoirs, streams and rivers provided information to area fisheries managers on the need for maintenance stockings of species including but not limited to channel catfish, muskellunge, hybrid striped bass and other sportfishes, as well as forage species including gizzard shad and various shiners.

The evaluation of walleye stocking continued with three waters studied with the use of oxytetracycline-marked walleye stocked in the spring (fry), in early summer (small fingerlings), and in late summer (large fingerlings). Results are encouraging. The mark formed in the otolith, or inner ear bone, is an effective way to distinguish hatchery fry and fingerling walleye from wild stock.

Intensive netting and electrofishing occurred in the 10 conservation regulation lakes. Bass populations in a number of lakes and reservoirs were studied to establish a database on Pennsylvania bass and to determine candidates for the Big Bass Program. An innovative package of regulations was designed and approved by the Commission for small lakes and ponds in the Clarion County Conservation District's Beaver Creek Project.

Regulations involving bass and walleye in the Delaware River were changed (for 1991) in agreement with New York and New Jersey. River sampling occurred as part of the monitoring of those populations with the new regs. Studies on the quality and quantity of the Commonwealth's smallmouth bass populations continued with a number of sampling sites on numerous streams and rivers as part of the evaluation of the 10-inch minimum size limit and the 15-inch/two-bass daily creel limit during the trophy spring season in the Susquehanna River watershed.

Herpetology and endangered species

Staff specialist presented slide lectures on Pennsylvania amphibians, reptiles, fish and aquatic organisms, including those considered endangered, threatened or of indeterminate status, to a variety of audiences; participated in instruction of DWCOs; participated in Wild Resource Conservation Board meetings; processed 185 scientific collector permits, 475 individual rattlesnake hunter permits, and 12 organized amphibian and reptile hunt permits; responded to numerous correspondence and telephone requests for information about amphibians, reptiles and endangered species; reviewed new *Amphibians and Reptiles of Pennsylvania* publication and *Angler* articles; participated in a meeting of the Herpetology Advisory Committee and meetings of the Pennsylvania Biological Survey Steering Committee, and Northeast Nongame Technical Committee; conducted field habitat surveys for species of special concern; reviewed several contracts for species of special concern life history and status survey work under auspices of the Wild Resource Conservation Fund; and provided various commentary to consulting groups and agencies concerning endangered and threatened species and their habitats.

Education and information

The staff continued to work with the angling public, with Commission personnel and with individuals from the private and public agency sector regarding Fish Commission programs and the resources for which we are responsible.

Staff attended fishing expos, tournaments and camporees to provide displays, demonstrations and opportunities for participants and attendees to learn more about the Fish Commission.

Staff provided newspaper, magazine, radio and TV coverage on a variety of topics ranging from the very specific (management of an individual water) to the very general (entire Fish Commission programs or fisheries available in Pennsylvania).

Numerous lectures, demonstrations and slide presentations were made to groups that ranged from unorganized anglers observing a field survey to formal meetings of statewide organizations and educational and civic groups.

Staff worked with the Bureau of Education & Information on the preparation of the 1991 license summary booklet and a new fish identification publication, and provided general information on individual species and management programs, reviewed proposed articles, and provided information to freelance writers for *Angler* use.

We also continued our student intern program, and processed many requests for information by professional and lay individuals, often with detailed responses.

General administration

Highlights of other division activities include: Coordinated statewide maintenance/acquisition of fisheries management supplies, materials and equipment, continued construction of standardized flatbottom boat electrofishing and lighting systems, updated Pennsylvania Annual Recreation Plan, reviewed draft resource management plans for select state parks, and participated in regional seminars on trout management for Trout Unlimited. Interviewed and selected individuals to fill two vacancies created during the fiscal year, inspected aquaculture facilities requesting to culture tilapia, attended

Bureau of Boating

Dan Martin

Bureau of Law Enforcement

Bureau of Law Enforcement photos

WCO Ammon Ziegenfus (above) answers a show-goer's questions. In addition to their primary duties, officers attended some 825 programs, including radio and TV shows, sport shows, school programs and sportsmen's group meetings.

Bureau of Law Enforcement

Bureau of Law Enforcement

Art Michaels

Art Michaels

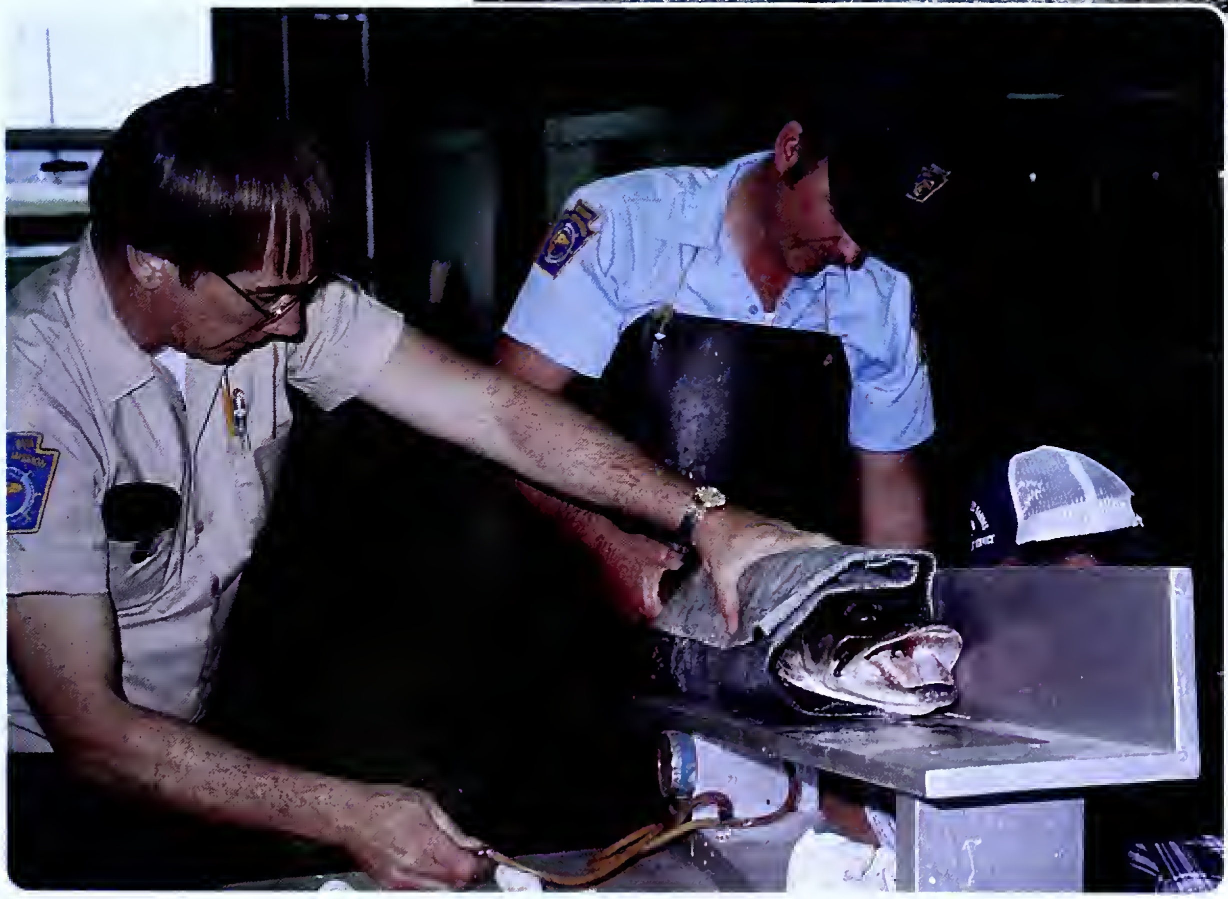
Waterways conservation officers tackle a wide variety of vital Commission functions. Officers pictured here are (clockwise from top left) WCO Tom Kamerzel, WCO Guy Bowersox, WCO Emil Svetahor, WCO John Bowser, Regional Manager Paul Swanson (wearing hip boots) and WCO Stan Plevyak.

Bureau of Law Enforcement

Art Michaels

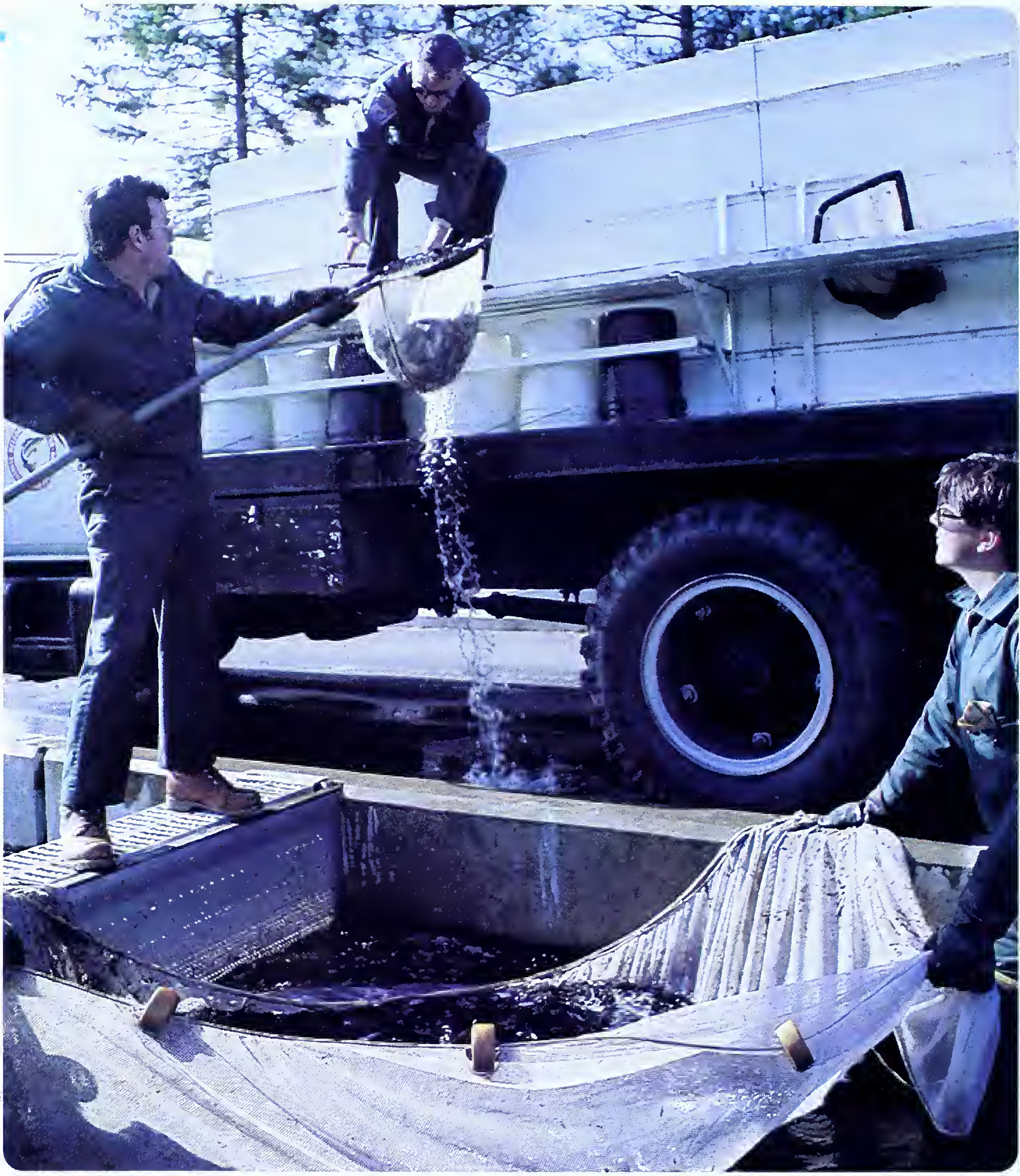
During fiscal year 1989-90, the Fish Commission stocked more than 111.3 million fry, fingerling and adult fish.

Russ Gettig



Fish Commission file

The Perca *(top photo) is the Commission Lake Erie research vessel. An electrofishing crew (above) led by Area Fisheries Manager Mike Kaufmann (at left, wearing electrofishing gear on his back) surveys a southeast Pennsylvania stream. Commission employees (left) at the Linesville Fish Culture Station check the condition of a musky as they collect eggs for spawning.*



Russ Gettig

Hatchery employees (above) prepare trout for stocking in Upper Woods Pond, Wayne County. A raceway roof (right) at the Linesville Fish Culture Station counteracts bird predation.

Shyd Hood

budgeting/purchasing training, attended annual meeting with Ohio fisheries personnel on management of Pymatuning Reservoir, provided information on fish age/growth/abundance to various fisheries researchers across the country, and met with Pennsylvania Power & Light on management of Lake Chillisquaque. Participated in a two-day boating safety course taught by the Bureau of Boating. Three individuals attended a workshop on fish passage, two individuals attended Wild Trout IV Symposium in Yellowstone, one member attended national conference on angler surveys and two attended coldwater meeting of Southeast Division of AFS. Reviewed items associated with Dock Street Dam proposal (Susquehanna River), met with numerous clubs and organizations, requested and reviewed inquiries from DER as to stream reclassification (Chapter 93), gave presentation on acid precipitation, and held public meeting on management of Pymatuning Reservoir.

Collected 13 million eggs of American shad from the Delaware River for the restoration program, prepared annual requests for warmwater/coolwater production, prepared and submitted end-of-year (calendar) report to USFWS on the Fisheries Management DJ project. Netted Lake Ontelaunee for bullheads for tumor study, stocked various species, participated in joint Fisheries Management/Environmental Services surveys, participated in several pollution investigation and testimony efforts, completed the analysis and reporting of several studies, and updated the management plans for dozens of waters.

Coldwater Unit Leader Martin Marcinko was presented the Outstanding Conservation Professional Award by the Pennsylvania Council of Trout Unlimited.

Fish Stocking Statistics - 1989-90 Fiscal Year

State-Federal Stocking Program

Coldwater Fisheries	*No. of Areas Stocked*	*No. of Miles Stocked*	*No. of Acres Stocked*
Number of streams stocked with adult trout	805		
Miles of streams stocked with adult trout		4,983	
Acres of streams stocked with adult trout			22,790
Number of lakes stocked with adult trout	121		
Acres of lakes stocked with adult trout			19,221
Totals	926	4,983	42,011
Warm/Coolwater Fisheries			
Number of warm/coolwater areas stocked	146		
Miles of warm/coolwater streams stocked		264	
Miles of warm/coolwater rivers stocked		984	
Acres of warm/coolwater ponds and lakes stocked			77,545
Totals	146	1,248	77,545

GRAND TOTAL OF ALL SPECIES STOCKED 111,346,682

Number of coldwater fish (trout and salmon) stocked:

Fry 0
Fingerling 4,558,599
Adult 5,562,467
Total 10,121,066

Number of warm/coolwater fish stocked:

Fry 99,248,635
Fingerling 1,968,856
Adult 8,125
Total 101,225,616

Division of Research

Brood stock development

Selection programs have been developed by systematically spawning single pairs of brood fish and producing families that are then evaluated separately. An individual egg jar incubation unit has been developed for fish culture programs, and six such units are now functioning at the following fish culture station brood facilities: Big Spring, Huntsdale, Benner Spring, Oswayo, Linesville and Reynoldsdale. Program guidance in brood stock selection has been given to personnel at each fish culture facility. Research continues on the development of the following seven salmonid strains: 1) A virus-resistant brook trout strain selected from parents that do not carry detectable virus (Benner Spring and Oswayo Fish Culture stations); 2) A brook trout strain resistant to the bacterial disease furunculosis, selected from survivors of laboratory-induced infections (Tylersville Fish Culture Station); 3) A spring-spawning rainbow trout that will give added growth by spawning earlier in the year (developed for use in our northern facilities where winter growth is slower, or for various put-grow-and-take programs); 4) A rainbow trout strain that spawns twice a year (developed in cooperation with USFWS geneticists); 5) A virus-free brown trout that is also resistant to the bacterial disease furunculosis (Huntsdale Fish Culture Station); 6) The Seeforellen brown trout strain selected from a lake-run brown trout strain adapted to large, deep impoundments; and 7) a Pennsylvania coho salmon strain developed from brood stock returning to Lake Erie tributaries.

American shad

The Van Dyke Research Station for Anadromous Fish continued to investigate culture techniques for, and to culture, American shad as part of the Susquehanna River Anadromous Fish Restoration Committee's (SRAFRC) program. Thirty-four egg shipments were received during the spring of 1990 for a total of almost 29 million eggs from the Savannah, Pamunkey, Delaware, Hudson and Susquehanna rivers. American shad fry were stocked in the Juniata River at Thompsontown (5.7 million), the Susquehanna River below Conowingo Dam (3.9 million), the Lehigh River (2.1 million) and the Schuylkill River (285,000). An additional one million fry were released into ponds for research or grow-out including 529,000 released into four new ponds in Maryland. Some 60,000 fingerlings were released in the Juniata River during the fall of 1989. All fry releases in the Juniata River were coordinated with the U.S. Fish and Wildlife Service National Fishery Research and Development Lab to facilitate its studies of post-stocking mortality and predation. Released fish were tagged with tetracycline antibiotics.

Analysis of otoliths from juvenile shad outmigrating during the fall of 1989 indicated that the majority of the outmigrants were of hatchery origin. A method was developed to determine origin (hatchery or wild) of adult shad based solely on analysis of otolith microstructure. Using this technique we estimated that 82 percent of the adults entering the Conowingo fish trap in 1989 were of hatchery origin.

Amur pike program

During September 1989, over 1,000 Amur pike hybrids were released into Glendale Lake, Cambria County. Fifty of the most Amur-like fish were maintained as future brood fish. During the spring of 1990, 13 females were spawned and resultant fish did well. As of the end of June, approximately 3,000 fish remain on station. Surviving fish were stocked into Glendale Lake last fall.

Fish culture research initiatives

Research efforts directed toward resolving problems with the culture of warmwater and coolwater fishes included the following studies: 1) Use of triploid grass carp for the control of aquatic vegetation in small ponds; 2) Intensive culture of walleye fry to 30 days of age using circular tanks and two test diets;

3) Conversion of pond-reared walleye fingerlings to dry feed using four types of commercially available dry feed; 4) Intensive culture of purebred muskellunge fry and fingerlings using three commercially available dry feeds; 5) Pond rearing of walleye fry—difference in survival and harvest when stocking fry at rates of 200,000/acre, 100,000/acre, and 80,000/acre; 6) Use of carbon dioxide gas as an anesthetic for salmonids; and 7) Use of carbon dioxide gas as an anesthetic for spawning steelhead.

Fish health management

In 1985 the Fish Commission adopted a policy on fish health management and disease control, which included an operating procedure for fish transfer and disease control with the goal of reducing or eliminating serious fish diseases. The adoption of this policy resulted in increased involvement of the Pathology Unit in evaluating the suitability of proposed fish, fish egg, and fish gamete transfers. Included in the disease control effort is an annual hatchery inspection program to detect the presence of certifiable fish pathogens at 14 production facilities to minimize the spread of infectious agents. Other disease preventive measures include the following efforts:

- **Enteric redmouth disease (ERM) vaccination.** Enteric redmouth disease caused substantial mortalities to rainbow trout when initially introduced into our production system. Removal of ERM carrier fish from the Benner Spring, Bellefonte, and Pleasant Gap Fish Culture stations, plus an immunization program have eliminated ERM mortalities in our hatchery system. The vaccination effort continued at two of these facilities in 1989-90, with immunization of approximately 767,000 rainbow and palomino trout fingerlings. Monitoring of live boxes containing unprotected fish suggests that the ERM control program has reached its goal and that vaccinations against this disease may not be necessary in future production cycles.

- **Infectious pancreatic necrosis (IPN) virus.** IPN virus can cause significant fish losses in hatchery production. Coho salmon, steelhead trout, and American shad wild brood stocked and/or their progeny were monitored for the presence of this pathogen. Also, in conjunction with the pair-spawn brood stock development program, domestic trout brood stocks at the Benner Spring, Oswayo, and Huntsdale Fish Culture stations, as well as coho salmon brood at Fairview were monitored for the presence of pathogens in attempts to develop IPN and other disease resistance in our fish.

An evaluation was conducted to determine the feasibility of using iodophor solutions to disinfect sperm and eggs during the fertilization process. Preliminary results suggest that this technique may offer a method of control for IPN virus and other fish pathogens.

Record of Fish Stocked During Fiscal Year 1989-90

State-Federal Stocking Program

TROUT	FRY	FINGERLING		ADULT		GRAND TOTAL	
Species	*Number*	*Number*	*Weight*	*Number*	*Weight*	*Number*	*Weight*
Brook trout	—	673,270	12,817	1,247,157	567,008	1,920,427	579,825
Brown trout	—	1,950,850	51,544	2,239,048	992,760	4,189,898	1,044,304
Rainbow trout	—	318,360	11,270	1,956,141	910,478	2,274,501	921,748
Palomino rainbow trout	—	—	—	2,681	6,113	2,681	6,113
Lake trout	—	1,500	100	43,940	9,904	45,440	10,004
Steelhead trout	—	1,245,595	78,738	73,500	9,582	1,319,095	88,320
TOTAL TROUT	—	4,189,575	154,469	5,562,467	2,495,845	9,752,042	2,650,314
SALMON							
Atlantic salmon	—	85,024	3,284	—	—	85,024	3,284
Coho salmon	—	249,000	14,180	—	—	249,000	14,180
Kokanee salmon	—	35,000	553	—	—	35,000	553
TOTAL SALMON	—	369,024	18,017	—	—	369,024	18,017
FORAGE FISH							
Alewife	—	—	—	4,500	90	4,500	90
Fathead minnows	—	185,000	110	—	—	185,000	110
TOTAL FORAGE FISH	—	185,000	110	4,500	90	189,500	200
GAMEFISH							
American shad	24,914,085	60,350	862	—	—	24,974,435	862
Amur pike	—	1,125	113	—	—	1,125	113
Chain pickerel	—	9,950	240	450	160	10,400	400
Largemouth bass	—	96,911	2,470	150	144	97,061	2,614
Muskellunge (P)	—	89,460	2,935	—	—	89,460	2,935
Muskellunge (T)	—	121,300	12,668	—	—	121,300	12,668
Northern pike	—	5,500	769	—	—	5,500	769
Saugeye	1,048,000	40,700	31	—	—	1,088,700	31
Smallmouth bass	—	53,400	90	—	—	53,400	90
Striped bass	100,000	200,380	142	—	—	300,380	142
Striped bass x white bass	—	116,515	151	—	—	116,515	151
Walleye	70,186,550	614,215	1,843	—	—	70,800,765	1,843
TOTAL GAMEFISH	96,248,635	1,409,806	22,314	600	304	97,659,041	22,618
PANFISH							
Black crappie	—	—	—	99	80	99	80
Bluegill	—	28,000	24	2,905	1,078	30,905	1,102
Brown bullhead	—	—	—	1	1	1	1
Channel catfish	—	321,050	4,658	—	—	321,050	4,658
Redear sunfish	—	25,000	19	—	—	25,000	19
White bass	3,000,000	—	—	—	—	3,000,000	—
White catfish	—	—	—	13	39	13	39
Yellow perch	—	—	—	7	2	7	2
TOTAL PANFISH	3,000,000	374,050	4,701	3,025	1,200	3,377,075	5,901
GRAND TOTAL	**99,248,635**	**6,527,455**	**199,611**	**5,570,592**	**2,497,439**	**111,346,682**	**2,697,050**

- **Eye disorders.** Eye disorders in coho salmon fingerlings may be contributing to declining adult returns. Surveys were conducted at the salmon production facilities to determine the types and the incidence levels of these disorders. These vary with production cycles and production site. Contributing factors to the occurrence of eye anomalies appear to include stressors such as bacterial infections, high gas supersaturation, high raceway densities and poor water quality.

Diagnostic services

During fiscal year 1989, a total of 118 pathological investigations were conducted to

Record of Fish Stocked During the Fiscal Year 1989-90

(State Hatcheries Only)

TROUT	**FRY**	**FINGERLING**		**ADULT**		**GRAND TOTAL**	
Species	*Number*	*Number*	*Weight*	*Number*	*Weight*	*Number*	*Weight*
Brook trout	—	673,270	12,817	1,230,657	560,933	1,903,927	573,750
Brown trout	—	1,950,850	51,544	2,239,048	992,760	4,189,898	1,044,304
Rainbow trout	—	278,360	10,794	1,864,341	859,058	2,142,701	869,852
Palomino rainbow trout	—	—	—	2,681	6,113	2,681	6,113
Lake trout	—	—	—	42,000	4,654	42,000	4,654
Steelhead trout	—	1,222,000	78,352	73,500	9,582	1,295,500	87,934
TOTAL TROUT	—	4,124,480	153,507	5,452,227	2,433,100	9,576,707	2,586,607
SALMON							
Atlantic salmon	—	69,100	506	—	—	69,100	506
Coho salmon	—	249,000	14,180	—	—	249,000	14,180
Kokanee salmon	—	35,000	553	—	—	35,000	553
TOTAL SALMON	—	353,100	15,239	—	—	353,100	15,239
FORAGE FISH							
Alewife	—	—	—	1,500	30	1,500	30
Fathead minnows	—	185,000	110	—	—	185,000	110
TOTAL FORAGE FISH	—	185,000	110	1,500	30	186,500	140
GAMEFISH							
American shad	24,914,085	60,350	862	—	—	24,974,435	862
Amur pike	—	1,125	113	—	—	1,125	113
Chain pickerel	—	9,950	240	450	160	10,400	400
Largemouth bass	—	67,911	2,385	150	144	68,061	2,529
Muskellunge (P)	—	89,460	2,935	—	—	89,460	2,935
Muskellunge (T)	—	121,300	12,668	—	—	121,300	12,668
Northern pike	—	5,500	769	—	—	5,500	769
Saugeye	—	8,650	9	—	—	8,650	9
Smallmouth bass	—	—	—	—	—	—	—
Striped bass	—	1,250	2	—	—	1,250	2
Striped bass x white bass	—	8,655	9	—	—	8,655	9
Walleye	70,186,550	614,215	1,843	—	—	70,800,765	1,843
TOTAL GAMEFISH	95,100,635	988,366	21,835	600	304	96,089,601	22,139
PANFISH							
Black crappie	—	—	—	99	80	99	80
Bluegill	—	28,000	24	2,905	1,078	30,905	1,102
Brown bullhead	—	—	—	1	1	1	1
Channel catfish	—	—	—	—	—	—	—
Redear sunfish	—	—	—	—	—	—	—
White bass	—	—	—	—	—	—	—
White catfish	—	—	—	13	39	13	39
Yellow perch	—	—	—	7	2	7	2
TOTAL PANFISH	—	28,000	24	3,025	1,200	31,025	1,224
GRAND TOTAL	**95,100,635**	**5,678,946**	**190,715**	**5,457,352**	**2,434,634**	**106,236,933**	**2,625,349**

assist management staff at Fish Commission production facilities. A total of 208 disorders were detected during these investigations. Gill disease, systemic viral and bacterial infections, and external parasites were the most commonly detected pathological problems.

Lake Erie Research Unit

Over 60 million pounds of fish were taken from Lake Erie in 1989 by the commercial and sport fisheries of the combined four states and province of Ontario. This fish harvest and the fragility of the fish community calls for an attentive and consistent policy of stock exploitation among all conservation authorities. The Lake Erie Research Unit is accordingly committed to collaborative assessment of the fish stocks. It participates in the development of interagency management plans to foster lake-wide species restoration and population rehabilitation.

For over five years, the exceptional walleye fishing on Lake Erie has been the result of the prodigious 1984 year class, the largest produced by a walleye spawn in at least 25 years. Surveys confirm that this year class still dominates the population, but because of its age, it is declining in numbers. Unit personnel participated in interagency research activities that explored various walleye harvest scenarios.

The large populations of yellow perch, over 61 million adults throughout the entire lake, may have reached peak levels in Pennsylvania waters. Declines in catch rates are expected, because surveys show signs of modest-sized year classes entering the fishery in the near future. Despite the successful rehabilitation of perch stocks, harvest levels still persist at excessive levels. To conserve the vitality of future perch stocks, further control of the annual harvest may be necessary.

Lake Erie biologists are now disturbed by the population explosion of the invading zebra mussel. The effects this filter-feeding invertebrate will have on native Lake Erie fish food chains remain speculative. But the awesome numbers of mussels now colonizing the Lake Erie bottom have caught the attention of scientists, and research will focus on the mussel's influence on fish life.

Activities associated with enhancement and restoration of salmonid stocks involved (1) screening weir-returning and angler-caught coho salmon fin tags to assess the size and month of yearling release that produce maximum survival, (2) indexing the abundance of larval, parasitic and adult sea lamprey, (3) experimentally releasing tagged lake trout to assess offshore and near-shore survival, (4) sampling of lake trout stocks to assess their growth, mortality and maturity in Lake Erie, and (5) re-drafting a plan for rehabilitation of lake trout to self-sustaining status in eastern Lake Erie. Participants in drafting the plan included fisheries personnel from the state of New York, the province of Ontario, and the U.S. Fish and Wildlife Service. Lastly, assessment of angler catch rates was accomplished through the continuing angler log program in which volunteers submit catch records to the Fish Commission.

Permit coordination

Fish culture stations that were granted the combined Department of Environmental Resources/National Pollutant Discharge Elimination System (DER/NPDES) industrial waste permits before July 1, 1989, were monitored monthly or bimonthly in accordance with their effluent discharge permit requirements. These fish culture stations include: Bellefonte, Benner Spring, Big Spring, Cedar Spring, Corry, Fairview, Huntsdale, Linesville, Oswayo, Pleasant Gap, Pleasant Mount, Reynoldsdale, Tionesta, Tylersville, Union City, Upper Spring Creek and Van Dyke. An application was submitted to renew the DER/NPDES water quality permit for the Oswayo facility. Additionally, laboratory evaluation and staff coordination time was spent reconciling solid waste management concerns.

Water quality laboratory

During fiscal year 1989, some 2,139 water and sludge samples were submitted to the Benner Spring Water Quality Lab for analysis. These samples required 5,230 physical, chemical and bacteriological tests. At an average commercial fee of $12 per test (low estimate), the analyses would have cost approximately $62,760.

Office of Chief Counsel & Environmental Review

The Office of Chief Counsel & Environmental Review provides legal and environmental services to the Fish Commission. The office also provides liaison between the Fish Commission and other Pennsylvania agencies.

Chief counsel

The Fish Commission's chief counsel, Dennis Guise, Esq., serves as legal adviser to the Commission, the executive director and the staff of the Fish Commission. Because the Fish Commission is an independent agency, he has wide-ranging responsibilities under the Commonwealth Attorneys Act of 1980.

The chief counsel represents the Fish Commission in administrative litigation before the Environmental Hearing Board, the Board of Property, Civil Service Commission, Board of Claims, the Board of Finance and Revenue, and the Human Relations Commission. The chief counsel also coordinates court litigation with the Office of Attorney General, and represents the Commission before Commonwealth Court in appropriate cases.

Division of Warm/Coolwater Production Fish Stocked -

FY July 1, 1989, to June 30, 1990

Species	*Fry*	*Fingerlings*	*Weight*	*Adult*	*Weight*	*Total Fish*	*Total Weight*
Lake trout	—	—	—	42,000	4,654	42,000	4,654
Lake trout, Fed-60	—	1,500	100	1,940	5,250	3,440	5,350
Atlantic salmon	—	69,100	506	—	—	69,100	506
Atlantic salmon, Code 60	—	5,724	1,109	—	—	5,724	1,109
Atlantic salmon, Code 61	—	10,200	1,669	—	—	10,200	1,669
Kokanee salmon	—	35,000	553	—	—	35,000	553
American shad	24,914,085	60,350	862	—	—	24,974,435	862
Amur pike hybrid	—	1,125	113	—	—	1,125	113
Chain pickerel	—	9,950	240	450	160	10,400	400
Largemouth bass	—	96,911	2,470	150	144	97,061	2,614
Muskellunge, (P)	—	89,460	2,935	—	—	89,460	2,935
Muskellunge, (T)	—	121,300	12,668	—	—	121,300	12,668
Northern pike	—	5,500	769	—	—	5,500	769
Saugeye	—	8,650	9	—	—	8,650	9
Saugeye, Code 61	1,048,000	32,050	22	—	—	1,080,050	22
Smallmouth bass, Code 61	—	53,400	90	—	—	53,400	90
Striped bass	—	1,250	2	—	—	1,250	2
Striped bass, Code 61	100,000	199,130	140	—	—	299,130	140
Striped bass hybrid	—	8,655	9	—	—	8,655	9
Striped bass hybrid, Code 61	—	107,860	142	—	—	107,860	142
Walleye	70,186,550	614,215	1,843	—	—	70,800,765	1,843
Forage	—	185,000	110	1,500	30	186,500	140
Forage, Code 61	—	—	—	3,000	60	3,000	60
Panfish	—	28,000	24	3,025	1,200	31,025	1,224
Panfish, Code 61	3,000,000	346,050	4,677	—	—	3,346,050	4,677
GRAND TOTAL:	99,248,635	2,090,380	31,062	52,065	11,498	101,391,080	42,560

Note: Codes Fed-60 and State-61 are fish that were supplied from federal and state exchange programs.

The chief counsel provides legal reviews for all Fish Commission regulations, contracts, deeds and leases. He also supervises the Commission's environmental and technical functions.

During 1990, the Office of Chief Counsel & Environmental Review coordinated a number of significant environmental, regulatory and legal matters. New Fish Commission regulations on a trout/salmon stamp program and registration of boats using Commission property sparked particular interest and concern. The chief counsel represented the Commission in complex environmental litigation on the Dock Street Dam before the Environmental Hearing Board and in litigation before the Federal Energy Regulatory Commission on the cumulative impacts of proposed hydropower projects on the Ohio River system. The Commission's chief counsel represented the Commission in multi-party and multi-agency settlements of serious pollution cases resulting in payments of hundreds of thousands of dollars to the Fish Fund.

The chief counsel also represented the Commission in litigation before the Civil Service Commission and Commonwealth Court, in which work-place free speech issues were litigated. In addition, the chief counsel coordinated litigation over the trout/salmon stamp regulations with the Office of Attorney General.

Division of Environmental Services

The Division of Environmental Services (DES) provides technical assistance and guidance on environmental matters to many federal and state agencies as well as to the general public. The Fish Commission holds trusteeship for all fish and aquatic life that lives in Commonwealth waters, and the Commission is actively involved in protecting these resources through the role it plays in commenting on permit applications required by various other regulatory agencies.

The DES coordinates this proactive role of resource protection by being the clearinghouse for most information dealing with environmental affairs. Close coordination with the bureaus of Law Enforcement and

Bureau of Fisheries

Fisheries Management

Fisheries is essential to ensure that the appropriate regulatory agency has all the facts before making a final permit decision. DES staff has specialized training to provide assistance on topics such as the toxic properties of today's hazardous chemicals and their effects on various species and life stages of fish and other aquatic life; instream flow needs to ensure that streams continue to flow during dry weather despite intensive use of water resources for water supply and hydropower development; impacts to receiving streams from coal and non-coal mining, sand and gravel dredging, peat extraction, oil and gas development, highway construction and logging; physical impacts to stream and wetland habitats as a result of illegal and unpermitted land development; the effects of acid precipitation on Commonwealth waters; and the treatment of waters to ameliorate the impacts of acid rain.

The Division's statewide responsibility requires constant coordination with almost every regulatory bureau within the Department of Environmental Resources, and many federal agencies such as the U.S. Environmental Protection Agency, Army Corps of Engineers, Federal Energy Regulatory Commission and Fish and Wildlife Service.

Permit review responsibilities reflected in the following table consume a large amount of staff time. However, the time spent working with developers and regulatory agencies on minimizing environmental risks ultimately reduces the amount of time spent evaluating impacts.

The following summary details the actual number of permit applications reviewed by Division staff in fiscal year 1989-90:

Permit Application Reviews	***Number***
DER stream and wetland encroachment	1,051
DER sewerage	98
DER mine drainage	327
DER mining stream encroachments	59
DER solid waste	41
DER water allocations	38
PennDOT projects	308
FERC hydropower projects	20
COE 404 public notices	202
DER flood control projects	30
Earth disturbance	13
EA's	183

DES staff also assist individual WCOs in their investigations of specific pollution incidents or other violations of the Fish and Boat Code. This reactive role requires biologists to estimate actual damages to fish and aquatic life resources and calculate statutory penalties and compensatory damages.

Many of the permit reviews are routine and the projects do not pose significant impacts to biological resources in receiving streams; however, there are other projects that are highly controversial and get much public attention. The following list contains examples of the more significant permit review and enforcement cases Division staff has been involved with in FY 89-90:

Permit reviews

Doverspike Brothers Coal Refuse Disposal Area, *Jefferson Co.*
Penelec Coal Refuse Valley Fill, *Indiana Co.*
Indian Creek AMD, *Fayette Co.*
Waste Management Corp. SW Landfill, Biles Island, *Bucks Co.*
Colebrookdale Landfill, *Berks Co.*
Mount Zion Landfill, *Elk Co.*
Greater Johnstown Water Authority, Quemahoning Creek, *Somerset Co.*
Western Berks Water Company, Tulpehocken Creek, *Berks Co.*

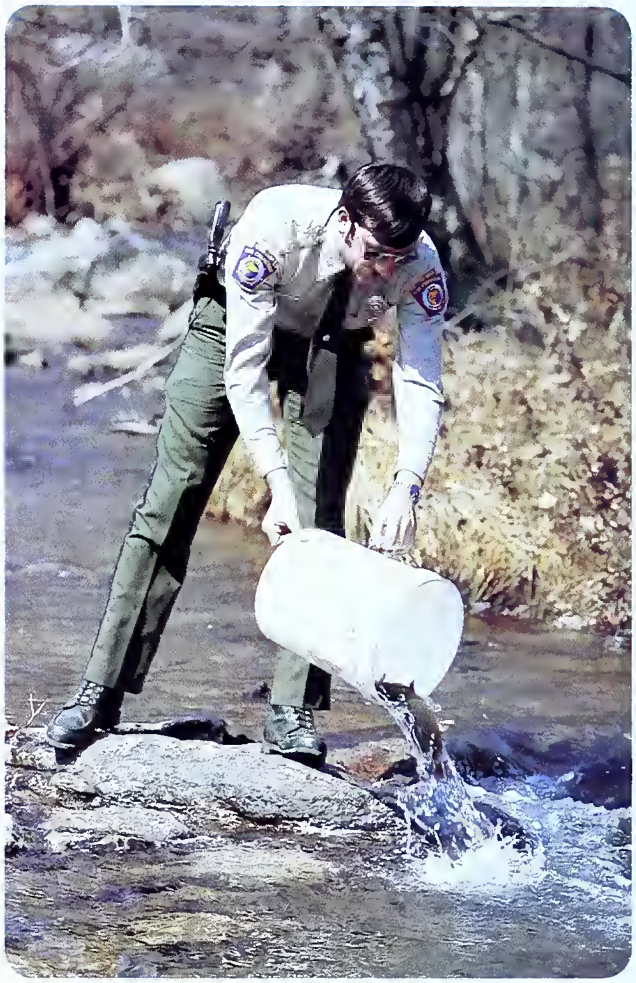
Bureau of Fisheries

July 1, 1989, to June 30, 1990

Division of Warm/Coolwater Production

Benner Spring FCS:	*Fry*	*Fingerling*	*Adult*	***Total***
Gamefish	—	47,700	—	47,700
Total Fish Stocked:				47,000
Total Station Expense:	$62,002.52			
Benner Spring Research:				
Gamefish	—	67,750	—	67,750
Total Fish Stocked:				67,750
Huntsdale FCS:				
Gamefish	22,364,250	171,744	—	22,535,994
Gamefish, State-61	100,000	136,130	—	236,130
Panfish	—	—	13	13
Panfish, State-61	—	90,400	—	90,400
Total Fish Stocked:				22,862,537
Total Station Expense:	$100,902.40			
Linesville FCS:				
Lake Trout	—	—	42,000	42,000
Panfish	—	—	2,012	2,012
Panfish, State-61	3,000,000	112,700	—	3,112,700
Gamefish	18,923,500	107,810	—	19,031,310
Gamefish, State-61	1,048,000	116,910	—	1,164,910
Total Fish Stocked:				23,352,932
Total Station Expense:	$363,923.23			
Oswayo FCS:				
Forage				
Lake Trout, Code-60	—	185,000	—	185,000
Total Fish Stocked:	—	1,500	1,940	3,440
Pleasant Mount FCS:				188,440
Atlantic Salmon	—	69,100	—	69,100
Atlantic Salmon, State-61	—	10,200	—	10,200
Forage	—	—	1,500	1,500
Forage, State-61	—	—	3,000	3,000
Kokanee Salmon	—	35,000	—	35,000
Gamefish	9,926,200	364,492	600	10,291,292
Gamefish, State-61	—	167,200	—	167,200
Panfish	—	28,000	1,000	29,000
Panfish, State-61	—	94,150	—	94,150
Total Fish Stocked:				10,700,442
Total Station Expense:	$322,745.65			
Tionesta FCS:				
Atlantic Salmon, Fed-60	—	3,500	—	3,500
Gamefish	16,120,500	115,400	—	16,235,900
Panfish, State-61	—	23,800	—	23,800
Total Fish Stocked:				16,263,200
Total Station Expense:	$115,415.90			
Reynoldsdale FCS:				
Gamefish, State-61	—	1,200	—	1,200
Panfish, State-61	—	25,000	—	25,000
Total Fish Stocked:				26,200
Union City FCS:				
Atlantic Salmon, Code-60	—	2,224	—	2,224
Gamefish	2,852,100	93,120	—	2,945,220
Total Fish Stocked:				2,947,444
Total Station Expense:	$155,903.07			
Van Dyke:				
Gamefish	24,914,085	20,350	—	24,934,435
Total Fish Stocked:				24,934,435
Total Station Expense:	$26,783.40			

Bureau of Fisheries



Russ Gettig

Grand Total Fish Stocked:

more than 111.3 million

Grand Total Expenses:

$21,594,010

Russ Gettig

Airport Parkway Southern Expressway, *Allegheny Co.*
Greensburg Bypass, *Westmoreland Co.*
Beaver Valley Expressway
York Haven Hydroelectric Project
Youghiogheny Reservoir Hydroelectric Project, *Somerset Co.*
Upper Ohio River Basin Hydroelectric Licensing

Enforcement cases

McDonald Land and Mining, *Clearfield Co.*
HRI Limestone Quarry, *Centre Co.*
Moccasin Run Disturbance, *Clinton Co.*
Texas Eastern Pipeline Company Sedimentation, *Somerset, Bedford, Fulton, Franklin and Adams counties*
DER, Bureau of Forestry Sedimentation, Hook Natural Area, *Centre and Union counties*
CSX Train Derailment, Youghiogheny River, *Westmoreland Co.*
NGK Chemical Pollution, Laurel Run, *Berks Co.*
Texas Eastern PCB Contamination
Buckeye Pipeline Company Oil Spill, *Armstrong Co.*
Train Derailment, Buffalo Creek, *Armstrong, Co.*
EPA Superfund Cleanup, Ruetgers-Nease Chemical Company, *Centre County*

Division staff also perform applied research in specific program areas. On-going studies for FY 1989-90 include an acid rain study evaluating mercury contamination of fish tissue in selected lakes across the Commonwealth; a monitoring study on Clover Creek, Blair County, to assess the effectiveness of an SCS program to control erosion and better manage animal wastes in the watershed; a wetted perimeter study on Connoquenessing Creek and Thorn Run, Butler County, to determine instream flow needs; assisting ORSANCO in sampling fish from the Ohio River locks and dams; sponsoring an SCS RAMP project on wetland treatment and AMD on Keystone Lake, Armstrong County; a cooperative study of commercial dredging on the Allegheny River; funding recreational use studies on the Allegheny, Monongahela and Ohio rivers with part of the Ashland Oil spill settlement; and participating on a bioengineering technical facility work group to determine the effects of low-head hydro development on the fisheries of the upper Ohio River.

Environmental and Technical Liaison

Robert B. Hesser continues to serve as the Fish Commission's environmental and technical liaison. He provides environmental and technical liaison functions with a host of other state and federal agencies on a wide variety of subjects including fish management, impoundment drawdown, water quality, fish contaminants and pesticide use. Among these agencies are the Susquehanna and Delaware River Basin commissions; the Chesapeake Living Resources Team for the Chesapeake Bay; the Pennsylvania departments of Health, Environmental Resources and Agriculture; and the U.S. Fish and Wildlife Service and National Marine Fisheries Service.

The Environmental and Technical Liaison continues to represent the Commission on a number of technical committees overseeing the restoration of American shad, striped bass and other migratory species in both the Delaware and Susquehanna River basins. In this capacity he serves as chairman of the Delaware Basin Fish and Wildlife Management Cooperative's Technical Committee and serves as a member of two technical committees on the Susquehanna.

In addition, Mr. Hesser serves as alternate for the executive director on the Mid-Atlantic Fishery Management Council and as a member of several committees of the Atlantic States Marine Fisheries Commission. These include the Advisory Committee, and Statistical and Scientific committees for Shad and River Herring, Striped Bass and Atlantic Sturgeon. One of the primary functions of these committees is to formulate management plans for the various interstate species, for adoption by the Atlantic coastal states.

Mr. Hesser also has been a member of the Pennsylvania Pesticide Advisory Board since its inception in the early 1970s. This board, which is comprised of members appointed by the governor, advises the secretary of agriculture and the Department concerning rules and regulations and other pertinent pesticide issues as provided by the Pennsylvania Pesticide Law.

Two of the more demanding and time-consuming functions of this position are the review and approval, on behalf of the Commission, of all impoundment drawdown permits and aquatic herbicide applications for permit to treat ponds and lakes in the Commonwealth. The impoundment drawdown application review and approval process was moved in mid-1990 from the Harrisburg office and was assigned totally to Mr. Hesser.

Mr. Hesser has co-authored several publications with staff of The Pennsylvania State University's Cooperative Extension Service and has written several Commission publications on aquatic vegetation control. He provides advice on the use of aquatic herbicides in ponds and lakes and in general fish pond management. He also gives specialized training for individuals needing Department of Agriculture certification for purchasing and applying aquatic herbicides.

Russ Gettig

Bureau of Fisheries

Bureau of Boating

Art Michaels

Art Michaels

Tom Thomas (above), Information Systems Division chief, enters data into a Commission computer file. Dave Tregea (right), computer programmer, checks a printout.

Computer systems analyst Barry Pitt (above) changes an item of equipment in the Commission's mainframe computer. Computer systems play a major role in all aspects of Commission operation.

Bureau of Administrative Services

Art Michaels

The Commission issued more than 1.1 million fishing licenses in fiscal year 1989-90 through some 1,750 issuing agents, including county treasurers and private businesses in Pennsylvania, New York and Ohio.

Bureau of Administrative Services

The Bureau of Administrative Services supports the primary programs of the Fish Commission. These functions include the issuance of fishing licenses, purchasing and procurement of goods and services, warehousing and inventory, payroll and personnel, fiscal planning, budget preparation and administration, vehicle fleet services, telecommunications, issuance of special permits and licenses, duplicating, mail and messenger services, federal aid coordination, training, recycling, insurance, sale of surplus property, and other related support services.

Federal Aid Section

The Federal Aid Section prepared and submitted documentation for federal assistance on four new projects and seven additions to existing projects during the fiscal year ending June 30, 1990. Total reimbursements for all federal projects were $4,184,106, a decrease of $328,391 from the previous year's reimbursements. Revenues were distributed as follows:

Fish Fund	$3,277,392
Boat Fund	906,714
Total	$4,184,106

Fishing License Section

This section appoints and works with approximately 1,750 issuing agents, which include county treasurers and private businesses in Pennsylvania, New Jersey and Ohio. Monthly reports are received and audited with revenues deposited daily to ensure maximum interest.

Fishing licenses issued in fiscal year 1989-90 include:

Resident	1,012,251
Senior resident	34,604
Senior lifetime	17,086
Non-resident	72,474
Tourist	18,737
Free	1,497
Total	1,156,649

Preliminary work is under way to print and sell trout/salmon permits for the 1991 fishing season.

Personnel Section

The Personnel Section develops and implements human resource management programs for Fish Commission employees, including recruitment and selection, classification and pay, employee benefits, personnel/payroll transactions, training, safety, affirmative action and labor relations.

The following are some of the highlights of the activities of the Personnel Section during the 1989-90 fiscal year:

- **Recruitment and selection.** An extensive recruitment and examination program produced a class of 15 new waterways conservation officers. After enduring a rigorous training period of about five months, the new officers will be ready for field assignments in February 1991.

The Personnel Section is working with the Civil Service Commission to embark on a statewide recruitment and testing program for fish culturists, fisheries technicians, and fisheries biologists sometime during the first quarter of calendar year 1991.

- **Performance standards and evaluation.** A major project is under way to develop performance standards for all Fish Commission employees. Also in the works is the design and implementation of a new procedure for measuring performance.
- **Benefits.** An orientation brochure for new employees is near completion. This brochure will be used in conjunction with an orientation checklist for supervisors.
- **Labor relations.** Preparations have begun for upcoming collective bargaining sessions with the American Federation of State, County, and Municipal Employees (AFSCME). Most of the non-supervisory and first-level supervisory personnel in the Commission are represented by AFSCME for collective bargaining purposes.

Procurement and Warehousing Section

Preliminary work has been completed to computerize and revamp the entire purchasing and inventory systems of the Commission. It is anticipated that the modernization will facilitate ordering commodities and services, and maximize the dollars spent on consumable items.

Office Services Section

The Office Services Section has initiated a recycling program for waste paper, cans and bottles in most Fish Commission facilities. In addition, this section is studying ways to cut postage costs to mollify the inflationary impact of the 20 percent increase in first class postage rates, which are due to be effective in February 1991.

Documentation was submitted during the year on the following new and existing projects:

Fish and Wildlife Restoration Act (D-J)	***Planned Costs***	***Anticipated Reimbursement***
**D-J Maintenance (F-30-D-25)	$785,000.00	$588,750.00
**Fisheries Management Project (F-57-R-13)	2,541,088.00	1,905,816.00
**Fisheries Technical Guidance (F-61-T-10)	675,100.00	506,325.00
**Lake Erie Anadromous Salmonids (F-62-R-5)	770,000.00	577,500.00
**Delaware River Striped Bass Restoration (F-66-R-4)	35,000.00	26,250.00
**Keystone Aquatic Resources Education (KARE) (F-69-E-2)	301,161.00	225,870.75
*Marietta Access Area (F-70-D-1)	88,000.00	66,000.00
*Lake Erie Task Groups (F-71-R-1)	126,056.00	94,542.00
*Pleasant Gap Wastewater Treatment Facilities (F-72-D-1)	602,594.00	451,945.50
	$5,923,999.00	$4,442,999.25
Fishery Conservation and Management Act of 1976 (NMFS)		
**Mid-Atlantic Fishery Management Council (MAFMC-89-5)	$6,474.15	$6,474.15
	$6,474.15	$6,474.15
U.S. Department of Transportation (U.S. Coast Guard - Boating Safety)		
*Boating Safety Program (10.01)	$625,423.00	$625,423.00
GRAND TOTALS	**$6,555,896.15**	**$5,074,896.40**

** new projects   **existing projects*

Automotive and Telecommunications Section

This section is producing a manual for the use and referral of employees who operate on-road vehicles. This manual will help ensure that Fish Commission vehicles are operated safely and economically, and servicing and preventive maintenance are done regularly. A study of usage patterns on passenger and fish culture station vehicles is under way with an eye toward reducing the size of the fleet. This section also completed a reappraisal of the value of Fish Commission facilities for the purpose of updating property insurance coverage.

Comptroller's Report

The fiscal year 1989-90 balance sheets and statements of unreserved fund balance for the Fish and Boat funds were prepared in accordance with Generally Accepted Accounting Principles (GAAP).

All other statements included with this report were prepared on a cash basis of accounting combined with an encumbrance budgetary system and as such are consistent with those of the previous year.

Fish Fund

Actual revenue deposited in the Fish Fund during the 1989-90 fiscal year was $21,051,359, an increase of $1,075,888, or five percent, over actual deposits in 1988-89 fiscal year. Miscellaneous income increased $1,053,992 primarily due to a $623,243 State Workman Insurance Fund Reserve Adjustment and a $250,000 restitution for fish killed in the Ashland Oil spill. Resident and non-resident fishing licenses increased $465,324 over last year's actual receipts. Offsetting these increases was a $603,116 decrease in federal reimbursements. However, it should be noted that $739,196 (applicable to the 1989-90 fiscal year) was received in July and August of 1990.

Expenditures and commitments for the Fish Fund totaled $21,594,010 in 1989-90 fiscal year, a $1,405,587, or seven percent, increase over last year's total. Significant increases were reported for salaries, wages and benefits, up $818,775; utilities, up $108,061; vehicle maintenance, up $161,953; maintenance services, up $152,126; automobiles, trucks and watercraft, up $121,917; developments and improvement to lakes and streams, up $90,083; postage, up $71,266; telephone, up $66,537; and equipment and furnishings, up $61,979. Offsetting these increases were decreases in fish food costs, down $347,024, and building improvements to new and existing structures, down $122, 170.

The June 30, 1990, unreserved/undesignated fund balance prepared on a GAAP basis was $11,104,698, a $108,947, or one percent, increase from last year's balance.

Boat Fund

Actual revenue deposited in the Boat Fund for 1989-90 fiscal year was $5,846,158, a $2,918,170, or more than a 99 percent, increase from last year's total. This increase is primarily the result of liquid fuel tax payments for the 1988-89 FY and 1989-90 FY totaling $2,947,000 received in FY 1989-90. Coast Guard grant money increased $314,120, or 79 percent, primarily because of $232,358 received in July of 1989, which was applicable to the 1988-89 fiscal year. Motorboat registration increased $78,059, or six percent, over last year's receipts. Offsetting these increases was a $39,395 decrease in sport fish restoration.

Expenditures and commitments total $5,367,000, a $696,057, or 15 percent, increase over last year's total. Significant increases were reported for salaries, wages and benefits, up $532,328; vehicle maintenance and repairs, up $55,592; maintenance of buildings and grounds, up $55,424; grants and subsidies, up $33,571; supplies, up $30,533; and utilities, up $33,076. Offsetting these increases were purchases of EDP equipment, down $80,706 and purchases of automobiles, trucks and watercraft, down $54,328.

The June 30, 1990, unreserved/undesignated fund balance in the Boat Fund prepared on a GAAP basis was $4,146,391, a $558,759, or 13 percent, decrease from a year ago.

Art Michaels

Area Fisheries Manager Craig Billingsley (center) discusses electrofishing with interested observers.

Fish Fund

Statement of Unreserved Fund Balance for the Fiscal Year Ended June 30, 1990

Fund balance - unreserved/undesignated, June 30, 1989	$10,995,751
Add:	
Actual cash receipts, July 1, 1989, through June 30, 1990	$21,051,359
Revenue earned as of 06/30/89 and deposited in 1989-90	(519,418)
Revenue earned but not received as of 06/30/90	
Licenses and fees	$ 78
Miscellaneous revenue	27,631
Interest on short term investments	86,282
Due from federal government (grants)	739,196
Total revenue accrued but not received as of 06/30/90	853,187
Total revenue earned during 1989-90	**21,385,128**
Lapses from prior year appropriations	627,014
Unreserved/undesignated fund balance before commitments and expenditures	33,007,893
Deduct: Current year expenditures and commitments posted from 7/1/89 through 6/30/90	21,594,010
Reversal of commitment and expenditure accrual for 1988-89	(264,019)
Expenditure accruals as of 6/30/90	2,179,167
Commitments liquidated against 6/30/90 expenditure accruals	(1,605,963)
Total expenditures and commitments incurred for fiscal year 1989-90	21,903,195
Fund balance—unreserved/undesignated, 6/30/90	**$11,104,698**

Fish Fund

Expenditures and Commitments by Division
Posted July 1, 1989, to June 30, 1990

Executive Office	$ 275,755
Bureau of Education & Information	1,099,981
Bureau of Administrative Services	1,748,075
Bureau of Fisheries - Administration	520,169
Fisheries Management	1,317,163
Fisheries Research	790,175
Warmwater/Coolwater Propagation	2,725,411
Trout Production	5,376,499
Bureau of Property & Facilities Management	182,275
Architecture & Engineering Administration	110,904
Engineering Section	143,524
Architecture Section	77,280
Special Projects	37,819
Dam Safety Section	68,153
Property Services	313,924
Construction & Maintenance Administration	104,704
Construction Section	966,091
Property Maintenance Section	784,734
Bureau of Boating	237,905
Law Enforcement	3,808,784
Chief Counsel	162,183
Environmental Services	338,915
Comptroller	340,577
Fish Fund General Operations Total	21,531,000
Treasury—General Obligations—Debt Service	63,000
Replacement Checks	10
Total Expenditures and Commitments	**$21,594,010**

Boat Fund

Statement of Unreserved Fund Balance
for the Fiscal Year Ended June 30, 1990

Fund balance - unreserved/undesignated, June 30, 1989	$ 4,705,150
Add:	
Actual cash receipts, July 1, 1989, through June 30, 1990	$ 5,846,158
Revenue earned as of 06/30/89 and deposited in 1989-90	(2,467,820)
Revenue earned but not received as of 06/30/90	
Licenses and fees	$ 532
Interest on short term investments	15,744
Due from other funds	762,000
Due from Federal government (grants)	214,514
Total revenue accrued but not received as of 06/30/90	992,790
Total revenue earned during 1989-90	4,371,128
Lapses from prior year appropriations	-0-
Unreserved/undesignated fund balance before commitments and expenditures	9,076,278
Deduct: Current year expenditures and commitments posted from 7/1/89 through 6/30/90	5,367,000
Reversal of expenditure accrual	(459,781)
Expenditure accruals as of 6/30/90	22,668
Fund balance—unreserved/undesignated, 6/30/90	**$ 4,146,391**

Fish Fund Revenue

Deposited July 1, 1989, to June 30, 1990

CURRENT YEAR LICENSES AND FEES:	
Resident fishing - regular	$12,147,010
Resident fishing - senior	69,208
Lifetime fishing - senior residents	170,861
Non-resident fishing	1,449,475
Tourist fishing	281,054
PA League of Angling Youth	7,449
Fishing lake licenses	18,720
Miscellaneous permits	17,215
Commercial hatchery	7,220
Scientific collectors' permits	5,655
Lake Erie	2,585
H. R. Stackhouse facilities user	5,610
Total licenses and fees	$14,182,062
FINES AND PENALTIES:	
Fish law fines	$ 230,138
MISCELLANEOUS REVENUE:	
Interest on securities & deposits	$ 865,816
Income from sand & gravel dredging	294,388
Miscellaneous revenue	93,392
Reimbursement of Van Dyke shad station operations costs	150,518
Refund of expenditures not crediting an appropriation	28,439
Sale of *Pennsylvania Angler*	289,468
Restitution for fish killed	636,715
Strs inventory receipts—deputy waterways patrolmen	713
Rental of Fish Commission property	20,339
Sales of patches	447
Sale of recreational items	3,778
Sales of publications	38,777
Sale of unserviceable property	27,655
Royalty payments	8,880
In-lieu of payments for fishways	75,000
Misc. revenue—SWIF reserve adjustment	623,243
Total miscellaneous revenue	**$ 3,157,568**
TOTAL NONTAX REVENUE	**$17,569,768**
AUGMENTATIONS:	
Federal aid	$ 3,277,392
Sale of vehicles	88,800
Reimbursement/PA Conservation Corps	115,399
Total Augmentations	$ 3,481,591
TOTAL REVENUE IN FISH FUND	**$21,051,359**

Boat Fund

Expenditures and Commitments by Division
Posted July 1, 1989 to June 30, 1990

Executive Office	$ 36,851
Bureau of Education & Information	344,527
Bureau of Administrative Services	384,973
Bureau of Property & Facilities Management	30,761
Architecture & Engineering Administration	48,694
Engineering Section	60,846
Architecture Section	29,056
Special Projects	16,203
Dam Safety Section	29,798
Property Services	79,449
Construction & Maintenance Administration	46,808
Construction Section	343,284
Property Maintenance Section	543,087
Bureau of Boating	1,171,376
Law Enforcement	2,122,681
Chief Counsel	16,124
Comptroller	60,482
Boat Fund general operations total	5,365,000
Department of General Services—general state authority rentals	2,000
Total Expenditures and Commitments	**$ 5,367,000**

Boat Fund Revenue

Deposited July 1, 1989, to June 30, 1990

CURRENT YEAR LICENSES AND FEES:

Motorboat registration	$ 1,448,158
Boat mooring permits	27,486
Boat capacity plate fees	15,618
Total licenses and fees	**$ 1,491,262**

FINES AND PENALTIES:

Motorboat fines	$ 98,697

MISCELLANEOUS REVENUE:

Reimbursement from motor license & liquid fuels tax fund	$ 2,947,000
Interest on securities	$ 302,315
Miscellaneous revenue - Fish Commission	14,934
Sale of *Boat Pennsylvania*	13,742
Sale of unserviceable property	-0-
Sales tax agent fees	36,594
Total miscellaneous revenue	**$ 3,332,585**
TOTAL NONTAX REVENUE	**$ 4,922,544**

AUGMENTATIONS:

Sport fish restoration	$ 194,676
Sale of vehicles	16,900
US Coast Guard/grant/boat/safety	712,038
Total Augmentations	**$ 923,614**
GRAND TOTAL ALL REVENUE IN BOAT FUND	**$ 5,846,158**

Classification of Expenditures and Commitments

(Posted July 1, 1989, to June 30, 1990, from Current Appropriations)

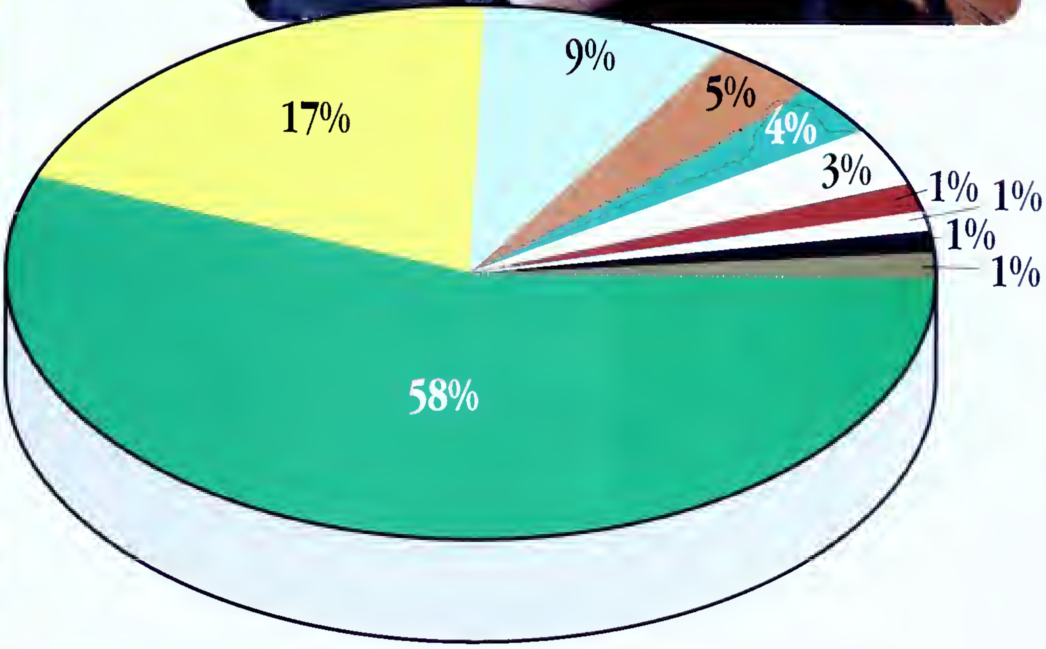
	Charged to Fish Fund	*Charged to Boat Fund*	*Combined Funds, Expenditures and Commitments*
PERSONNEL SERVICES			
Salaries and wages	$10,079,351	$2,377,300	$12,456,651
Employee benefits—state share	3,829,150	797,199	4,626,349
PERSONNEL SERVICES TOTAL	**$13,908,501**	**$3,174,499**	**$17,083,000**
OPERATIONAL EXPENSES			
Fish food	$814,225	$-0-	$814,225
Vehicle maintenance—gasoline, oil, repairs, etc.	489,511	164,009	653,520
Printing and advertising	460,731	197,664	658,395
Utilities (electricity, heat, water)	705,590	60,910	766,500
Payment to other state agencies for services rendered	225,876	59,504	285,380
Maintenance materials and supplies for construction, repairs and upkeep	323,299	88,353	411,652
Postage	214,118	206,778	420,896
Telephone expenses	212,124	75,863	287,987
Travel expenses	230,245	90,567	320,812
Maintenance and rental of office, copying, tabulating and EDP equipment	251,692	78,453	330,145
Contracted maintenance services of PFC buildings and grounds	212,228	102,220	314,448
Rental of buildings for office and storage	148,986	91,250	240,236
Contracted specialized services (legal, consulting, etc.)	602,141	228,988	831,129
Purchase of uniforms, clothing, footwear	72,626	13,614	86,240
Special conference expenses	36,573	23,485	60,058
Laboratory supplies, drugs and chemicals	45,597	1,627	47,224
Insurance—liability, surety, fidelity	54,055	20,674	74,729
Other supplies (office, educational, etc.) and services	379,322	124,102	503,424
OPERATION EXPENSES TOTAL	**$5,478,939**	**$1,628,061**	**$7,107,000**
FIXED ASSETS (Capital Improvements)			
Purchase of automobiles, trucks and watercraft	$609,731	$314,980	$924,711
Access area development and improvements to lakes and streams	312,063	38,516	350,579
Building improvements to new and existing structures	263,899	11,539	275,438
Machinery and equipment	415,360	41,609	456,969
Radio equipment purchases	45,554	32,422	77,976
Purchases of EDP equipment	264,406	54,787	319,193
Office equipment, furniture and furnishings	134,523	33,553	168,076
Land acquisitions	10,020	38	10,058
FIXED ASSETS TOTAL	**$2,055,556**	**$527,444**	$2,583,000
GRANTS AND SUBSIDIES	88,004	34,996	123,000
Pennsylvania Fish Commission general operations total	21,531,000	5,365,000	26,896,000
Treasury—general obligations debt service	63,000	2,000	65,000
Treasury—replacement checks	10	-0-	10
TOTAL EXPENDITURES AND COMMITMENTS	**$21,594,010**	**$5,367,000**	**$26,961,010**

Fish Fund Revenue

Deposited July 1, 1989, to June 30, 1990

Resident Fishing Licenses (includes senior licenses)	$12,387,079	🟩
Federal and augmenting revenue	$3,481,591	🟨
Non-resident, tourist and other licenses & fees	$1,794,983	⬜
Other revenue	$957,404	🟧
Interest income	$865,816	🟦
Restitution & contributions	$636,715	⬜
Sale of *PA Angler* subscriptions and publications	$328,245	🟥
Sand and gravel dredging	$294,388	⬜
Fish law fines	$230,138	⬛
In-lieu payments of fishways	$75,000	▨

TOTAL
$21,051,359



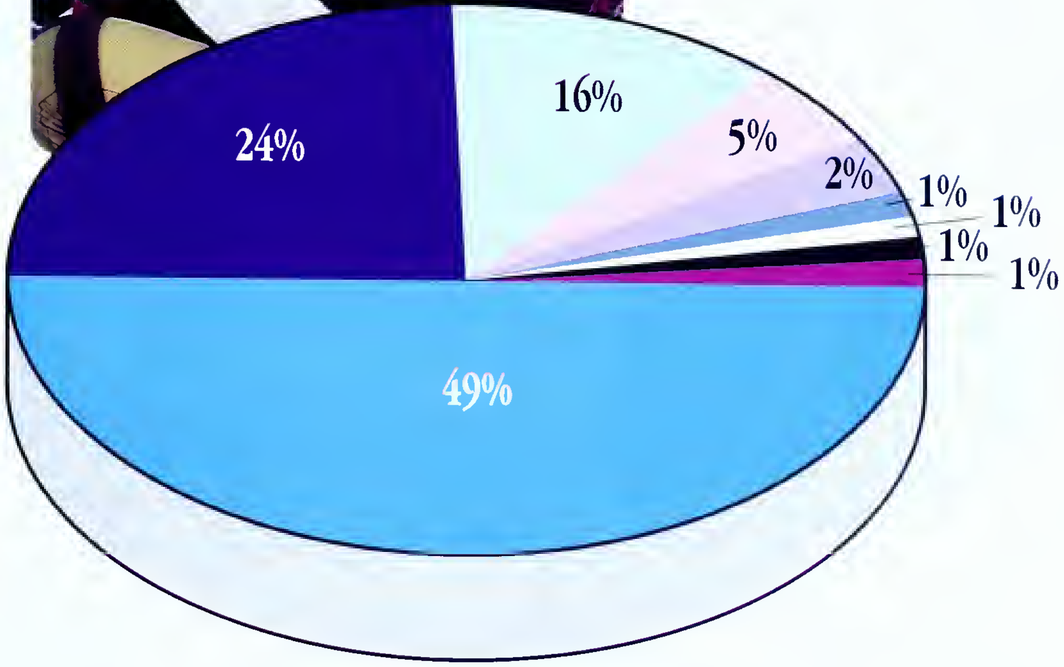
The Pennsylvania Fish Commission fiscal year begins July 1 and ends June 30.

Boat Fund Revenue

Deposited July 1, 1989, to June 30, 1990

Motor license & liquid fuels tax	$2,947,000	🟦
Motorboat registration	$1,448,158	🟦
Federal and augmenting revenue	$923,614	⬜
Interest on securities	$302,315	⬜
Motorboat fines	$98,697	🟪
Boat mooring permits and capacity plate fees	$43,104	🟦
Sales tax agent fees	$36,594	⬜
Sale of *Boat PA* subscriptions	$31,742	⬛
Other revenue	$14,934	🟪

TOTAL
$5,846,158



Pennsylvania Fish Commission Directory

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Information Systems Division, Tom Thomas, *Chief*	717-657-4369

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Special Publications and Broadcasting, Larry L. Shaffer	717-657-4518
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PA Angler, Boat PA Editor, Arthur J. Michaels	717-657-4518
PA Angler, Boat PA Circulation, Eleanor Mutch	717-657-4521
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Location	On Lake Somerset, Somerset, PA
Northeast, Kerry L. Messerle, *Manager*	717-477-5717
Mailing address	Box 88, Sweet Valley, PA 18656
Location	On Harris Pond, Sweet Valley, PA
Southeast, *manager position vacant*	717-626-0228
Mailing address	Box 8, Elm, PA 17521
Location	On Speedwell Forge Lake
Northcentral, Paul F. Swanson, *Manager*	717-726-6056
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Location	Fishing Creek Road, Lamar, PA
Southcentral, Frank Schilling, *Manager*	717-486-7087
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Location	On Pine Road, Huntsdale, PA

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450 Robinson Lane, Bellefonte, PA 16823-9616	
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450 Robinson Lane, Bellefonte, PA 16823-9616	

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Area 8: Richard D. Lorson	814-445-8974
RD 2, Box 39, Somerset, PA 15501-9311	

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Benner Spring, William C. Kennedy, *Manager*	814-355-4837
1225 Shiloh Road, State, College, PA 16801-8495	
Big Spring, Terry Farner, Acting *Manager*	717-776-3170
844 Big Spring Road, Newville, PA 17241	
Corry-Union City, Thomas L. Clark, *Manager*	814-664-2122
13363 West Smith Street Ext., Corry, PA 16407-8915	
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Division of Property Services, Eugene O. Banker, Jr., *Chief*	814-359-5149

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Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

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Straight Talk

Elk Creek Marina: A Major Step Forward

Tuesday, December 4, 1990, was a very rewarding day. Just before noon, I signed a land purchase contract for a 57-acre parcel of property located adjacent to Elk Creek on the shore of Lake Erie in Girard Township, Erie County.

This property has long been recognized as an important site for future development of public fishing and boating access to Lake Erie, and it has been under consideration for public purchase for nearly 30 years. It is located near Lake City, about 11 miles west of Erie, and when it's developed it will supplement existing public boating access at the Commission's Walnut Creek Access, seven miles to the east, and the protected harbor at Conneaut, Ohio, 10 miles to the west. Elk Creek also provides excellent shore fishing opportunities for salmon and steelhead trout because a Commission rearing and imprinting fish culture station is on the Elk Creek watershed. These waters will now be protected for continued public recreation.

Recent improvements in water quality and the fishery resources of Lake Erie have stimulated public fishing and boating interest to historic high levels, but present public and private marina and access facilities are used to capacity. The Commission's Walnut Creek Access is often filled beyond capacity early in the morning, and the need for expanded access to the lake is evident. Just as the existing Walnut Creek Access has provided countless hours of fishing and boating recreation, Elk Creek offers even greater potential for public benefit. The Commission will move ahead with preparation of long-range development plans, which it hopes will pave the way for obtaining the necessary funding to create this facility as soon as possible.

The Commission authorized the staff to pursue purchase of the Elk Creek lands on January 9, 1988. During these past three years we have had a continuous series of negotiations with the owners and other interested public agencies to structure an acceptable final agreement and obtain the required funding.

Only recently, through the tireless efforts of Eugene Banker, chief of the Commission Property Services Division, has the Commission been able to reach agreement with Arthur, Harry and Richard Rhoades, owners of this important property, to make it available for public purchase.

The Commission and Pennsylvania fishermen and boaters are grateful to the Rhoades brothers for their enlightened and cooperative efforts. In addition, Erie County, represented by County Executive Judith M. Lynch and the county council, and the Pennsylvania Division of Coastal Zone Management, represented by Division Chief E. James Tabor, deserve much credit for their dedicated interest and financial commitment to aid the Commission with partial funding for this purchase. In addition, Representative James R. Merry of Linesville has always been an active supporter of the Commission's long-standing efforts to obtain this facility for public use.

Development of this site is many years away, but the idea that public ownership will soon be a reality is the most important step to date toward creation of a major public recreational facility at this lakeside location. Lake Erie is one of the Commonwealth's most valuable aquatic resources and provides hours of fishing and boating pleasure for many people. The impact of these recreational pursuits on the economy of northwestern Pennsylvania is immeasurable. The Pennsylvania Fish Commission has shown great initiative in its tenacious pursuit of this acquisition. The Commission hopes that someday Elk Creek Marina will be an important addition to the fishing and boating program on Lake Erie. Your continued support of the Commission's efforts to reach that goal is essential.

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

Pennsylvania Fish Commission

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Pennsylvania ANGLER

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The Keystone State's Official Fishing Magazine

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The cover

This issue's cover was photographed by Philadelphian Bob Garman.

In this issue we officially begin celebrating the year 1991 as the Fish Commission's 125th birthday. In each issue during the rest of 1991, read about Commission history and Pennsylvania's sportfishing and boating past. In this issue, take a fascinating look at the 115-year-old Corry Fish Culture Station, beginning on page 4.

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CELEBRATING CORRY'S 115 YEARS OF FISH CULTURE

1866-1991

125 years

BY LINDA L. STEINER

Today's Corry Fish Culture Station can't claim to be the oldest state fish hatchery. That honor belongs to the defunct Marietta station in Lancaster County. However, Corry is the oldest Pennsylvania Fish Commission fish culture facility still in operation.

In 1876, just 10 years after Pennsylvania's first Board of Fisheries was established, the Western Hatchery at Corry, Erie County, was constructed for the purpose of rearing and stocking trout. Pennsylvania's actions were a response to a nationwide realization that America's natural resources, including its fisheries, were not inexhaustible and that they could no longer withstand unchecked poaching and pollution.

Among the innovations that appeared in the late 19th century were conservation movements that gave us our national and state parks as well as Pennsylvania's system of fish hatcheries. The original duties of Pennsylvania's Commissioners of Fisheries were "the hatching and propagation of useful tribes of food fishes, and to stock and supply all the streams, lakes, and fresh waters of the Commonwealth..." to replace what had been lost.

By 1875, the Marietta hatchery was so busy raising trout, and demand for the fish was so great, it was obvious that another location was needed. One of the best considered by the Board of Fisheries was just east of Corry, a nine-acre site owned by Seth Weeks. A small hatchery for brook trout was already operated there because the Corry property was "gemmed with springs of delicious water," which held a constant cold temperature and adequate flow. A usable house, barn and several earthen ponds were included, and the Pennsylvania Legislature acquired the package for $2,000. Seth Weeks stayed on to become Corry's first hatchery superintendent.

Another $3,000 was appropriated for immediate improvement, and the first hatch house, a wood-frame affair, 60 x 30 feet, was built. It had waist-high troughs for holding young trout, through which the "magnificent supply of water" could flow. That first year a total of 172,000 trout were hatched and stocked (as fingerlings), and 3,250 adult trout were placed in the outdoor ponds.

By 1884, Weeks's last year as superintendent, 405,000 brook trout fry were reared and stocked in 15 counties from Luzerne to Fayette to Erie. "California" or rainbow trout fry totaling 52,200 were raised and sent to four counties, and 47,000 salmon trout fry went to Lake Erie. Surprising to today's anglers, the station also produced and shipped 225 German carp to seven western Pennsylvania counties.

In 1885, a young, energetic William Buller took charge of the Corry station. He remained to shape the facility for more than three decades. When first purchased, the property was likened to a "primeval forest," with tangled vines and brooding trees. Under Buller's efforts and direction, the hatchery became an efficient trout producer as well as a tourist draw for the region. The brush and fallen debris were removed, the woods cleaned up, the bogs drained. A carriage drive was put in, lawns were established, and shaded, graveled walks were built for sedate Victorian strolls.

The property at its ornate peak featured fountains, rustic bridges and an abundance of flowers. Even roses were planted, but Buller noted in a report to the fisheries commissioners that Corry was rather inhospitable to gardening because "there was frost every month in the year except July." The hatchery grounds were used as a public park, so popular that postcards were issued depicting its attractions.

Under Buller's tutelage, the 15 natural springs at Corry were set to more efficient trout-raising work. By 1890, the Corry facility was working out so well that additional acreage was purchased and more ponds were constructed, bringing the total to 31. The original hatch house and its trough capacity were enlarged. Each of the troughs through which Corry's spring water flowed was capable of holding 20,000 freshly hatched fish.

THE CORRY FISH CULTURE STATION IS PENNSYLVANIA'S OLDEST OPERATING FISH CULTURE FACILITY.

At the same time, a meat house and a water wheel were erected. The wheel machinery aided in cutting up the beef liver and spleen that were the mainstay of the trout's diet at that time. By then, the hatchery was also producing lake trout and the newly arrived German brown trout.

Architectural marvel

By 1914, great changes were again under way at Corry. A new hatch house was built that would be considered, for its time, an architectural marvel. According to Superintendent Buller's report, "the year has been a very busy one, because we are endeavoring to propagate fish while rebuilding the ponds and erecting a new hatch house..." Buller added with apparent frustration that "propagating fish and rehabilitating ponds do not go well together...(but) we feel we were repaid for our extra efforts, exhausting as they were."

The new building was made of Corry Oriental brick, with a cement roof and tile cornice. Buller wrote, "I can safely say there will be no hatchery in the United States that will be its superior in completeness of detail and ornateness of design, while it will be equal or superior to any in its possibilities to turn out fish."

The refurbishment of the ponds included using concrete. It was learned that wet concrete and live fish do not mix well. A long lagoon was also constructed, which held exhibition fish for use in aquariums. Buller reported that the lagoon was "quite an ornamental feature as well as a useful one, as the fish in it will be mostly mature ones and possess more interest to the average visitor who would rather see whales than minnows."

The year 1915

By the first few years of the 20th century, the Corry hatchery was putting out prodigious numbers of trout. The 1915 *Report of the Department of Fisheries* noted that in Corry's production for the previous year there were 333,200 yearling brook trout and 215,300 brown trout. In the 1917 report, nearly 480,000 fingerling brookies and almost 74,000 browns were shipped.

About 75 years ago, the fingerling was still the backbone of Pennsylvania trout stocking. It was convenient to ship, and the fish suited the purpose of the fisheries program of the time, which was the introduction of new stock, not planting of "ready-to-catch" fish. Stocking was no easy job from the Corry hatchery, in the days before the truck and automobile. Trout went by horse-drawn wagon and by rail in 10-gallon milk cans.

The system worked better than expected, because Corry was on the line of the Pennsylvania Railroad and at that time narrow gauge rail ran up many creek bottoms to small towns and logging camps that have long since disappeared. Trout were carried into less accessible water in "Indian tanks," uncomfortable-looking but practical metal backpacks.

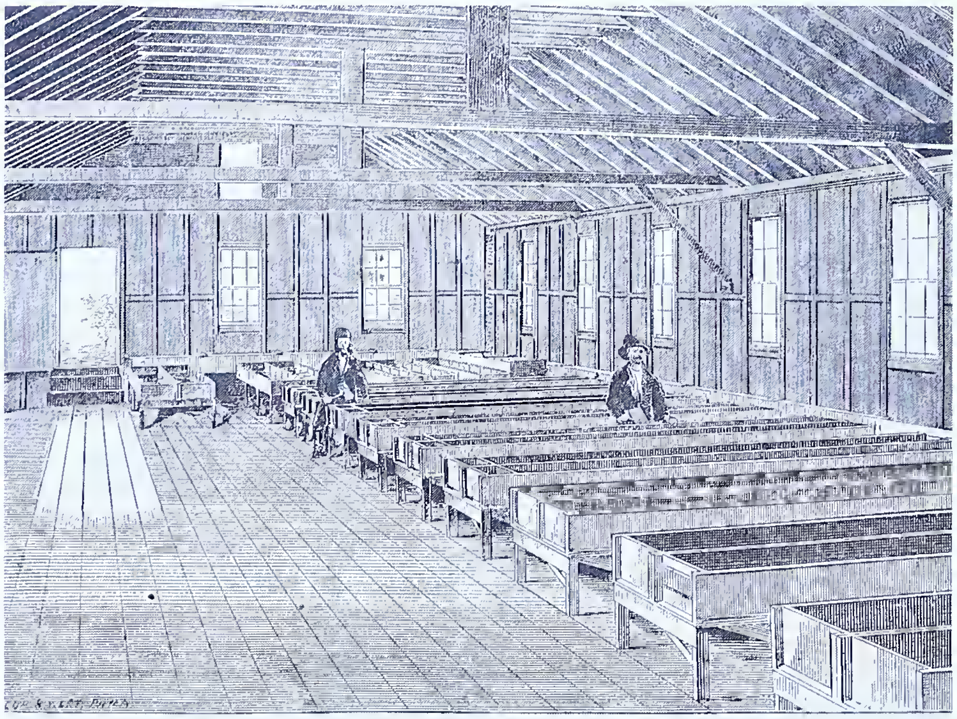
Costs

Careful records were kept of the stream destination of each trout shipment, as well as the cost of transportation and other hatchery expenses. Today the amounts are amusing. The Corry ledger for 1909 shows that the superintendent's monthly pay was $100. Laborers received $40. Horse feed was a substantial expense at $10.25 a month. An entry in November of that year reveals that the cost of shipping a can of trout by rail to Pittsburgh was $1, baggage rate. It cost only 15 cents to send the empty can back, express.

Today's Corry Fish Culture Station is still in the business of raising trout...that much has remained the same from 1876 to 1991. But the mainstay of the stocking program has changed from the fingerling to the ready-to-catch-size fish.

Each year Corry raises and distributes an average of 360,000 brooks, browns and rainbow trout, eight to 11 inches long. But according to station manager Tom Clark, fingerlings are figuring in the program once again, with 45,000 ordered from the hatchery for stocking this year.

In the intervening years, Corry's "magnificent springs" have been augmented by artesian wells, the water distribution system has been upgraded, the property expanded, and fish-rearing facilities and methods improved. Building on its rich past, Corry is looking to the fish culture future.



Interior Western Hatching-House.

Corry today

The station acreage now stands at 320, much of it watershed land acquired during the 1970s with Project 70 and Project 500 funds, to protect the source of the springs from agriculture and development. From a few dirt ponds 115 years ago, Corry's trout-rearing facilities have increased to 5,200 feet of linear concrete raceways. These are far superior for organizing the station's stock, for feeding and cleaning, and for controlling disease. In the beginning, ponds were built wherever the springs bubbled up. Now there is one main distribution center, a pump station, and pipeline system to the various raceways and troughs in the hatch house.

"Hatch house" is a misnomer, because trout hatching is no longer done at Corry. The station receives recently hatched fish from the Big Spring Fish Culture Station in Cumberland County. The advantage of this procedure, according to Clark, is that the southern Pennsylvania brood fish spawn more than a month earlier than Corry's, which allows a "jump" on the trout growing season.

Corry no longer has the old meat house and its attendant olfactory evils. Today's trout diet is a commercial mixture of vegetable meal, high-protein meat products, fish oils and vitamins. The food comes in digestible sizes geared to the length of the fish, from dustlike crumbles for the fry, to 1/4-inch pellets for adults. Clark considers the science of fish nutrition still to be in its infancy, although the current payback is an impressive one-pound fish for every 1.2 pounds of feed consumed.

Disease can be catastrophic when raising any animal in large numbers in close quarters, and that holds true for trout. In Corry's early days, treatment was crude, flushing salt through the system. Now not only are there better therapeutic chemical treatments and preventatives, but the Commission uses disease-resistant strains of trout. No longer do the hatcheries raise every trout that can be squeezed in. They work within limits that provide for adequate stocking numbers with better-looking, healthier fish.

New methods

One new, promising culture method is injecting pure oxygen into the water. Clark expects that this method will be used in the future at Corry. This technique increases the ability of the fish to metabolize food, and promotes better growth and overall health. Much of the research on oxygen injection is currently carried out by the private sector, including ironing out today's costliness, a deterrent to state hatchery use.

Some results of this century's technological boom are already in use at Corry, according to Clark. Automatic start-up generators kick in if a storm or other disaster interrupts electric service. The generators keep water flowing to the fish. Demand-feeders on some of the raceways allow fish to "feed themselves."

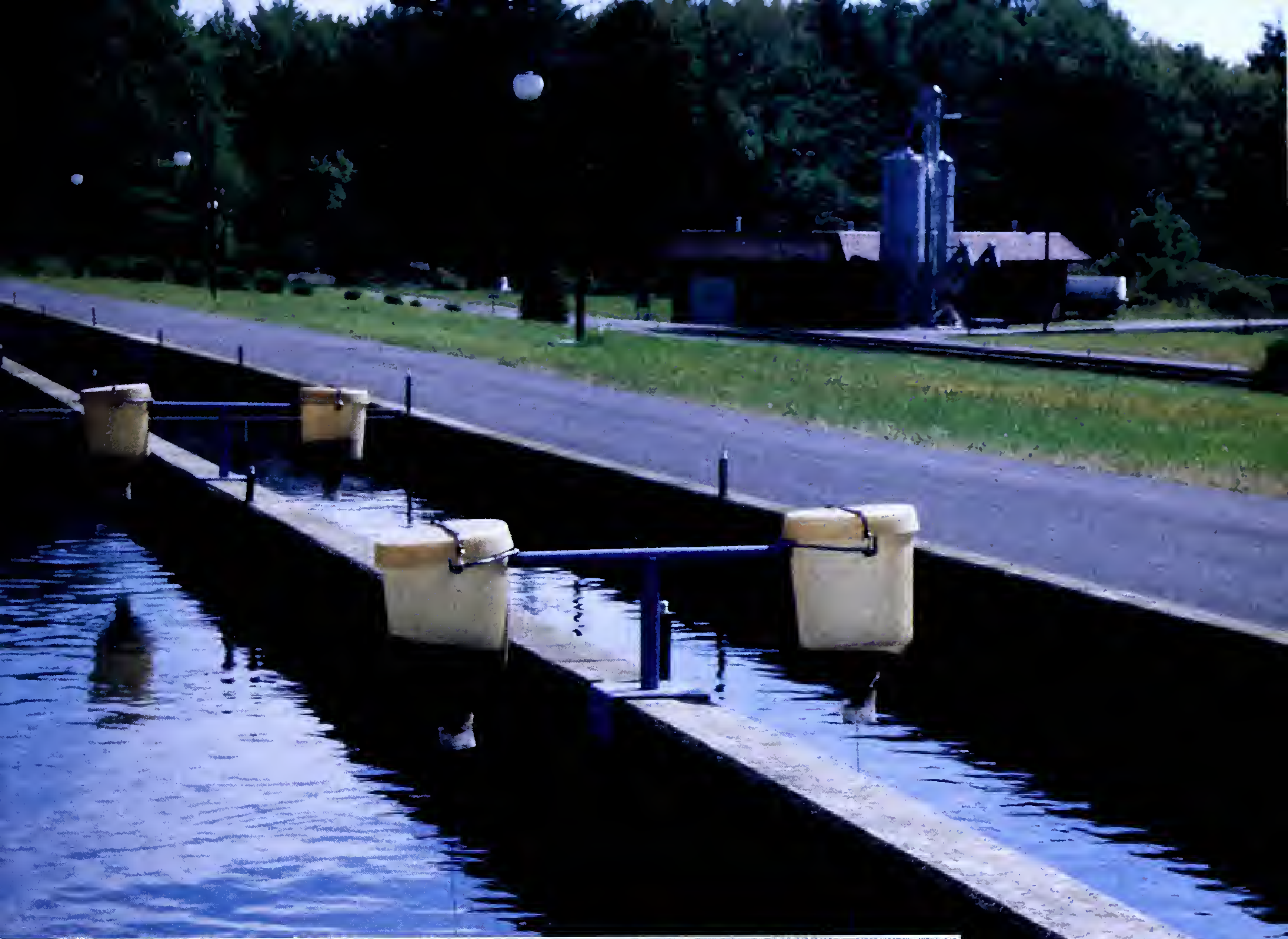
Though there are currently no feeders in the hatch house, Clark expects that in the future they will be used both inside and out. Using a blower-type feeder on the back of a pickup truck, all raceway fish can now be fed in 20 minutes, just by driving along the edges of the raceways. The truck is filled from a bulk storage container, a money-saver for the Commission and the angler.

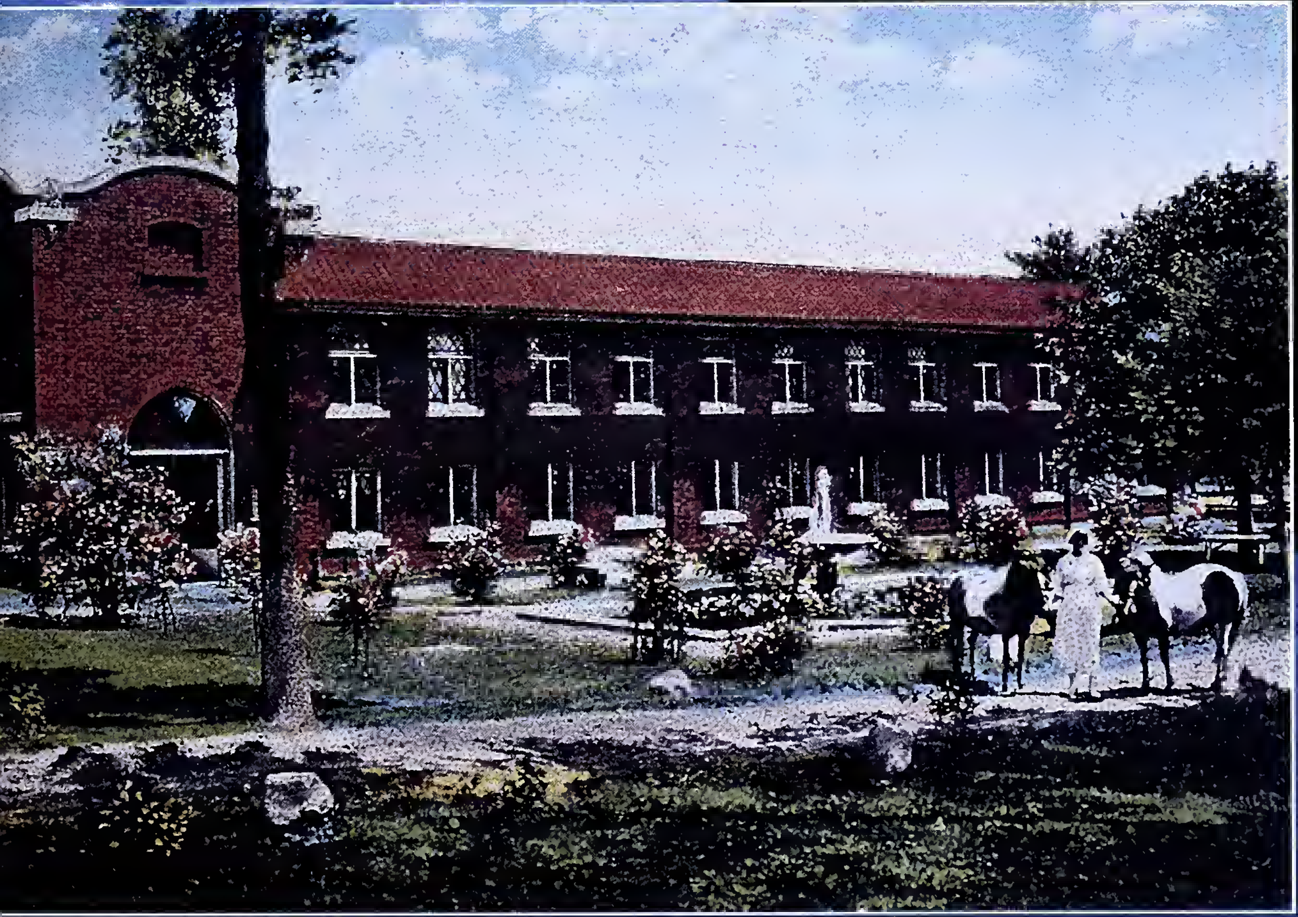
The Commission is still tackling the problem of water quality of the hatchery's effluent. The concern is no longer just how good the water is coming into the system, but the outflow must meet standards as well. Clark says that two ponds have been taken out of production to be used as settling basins, and that eventually all stations will have waste treatment facilities. He hopes for an agricultural designation for the waste, which would make a mild fertilizer and could be used on the grounds.

Year in, year out, raising trout is an around-the-calendar business at Corry. The most hectic months are March through May, when the stocking trucks roll, six days a week preseason, five days a week inseason, furnishing sport to expectant anglers. The rest of the year the schedule doesn't sound so different from that of many years ago, feeding and caring for the fish, keeping the equipment and the grounds in shape. Only now there is a computer to aid the pencils, and tractors instead of horses, and the bills are for gas and oil instead of hay and oats.

Fishery management and stocking strategies might change, and new devices and methods might be invented to improve the craft of fish culture. But one thing has remained the same from the last century to this century: The desire for trout in our Pennsylvania streams. It's unlikely the new century will be any different, which is why the Corry Fish Culture Station, and other Fish Commission hatcheries across the state, are expected to be in service for many years to come.

Linda L. Steiner



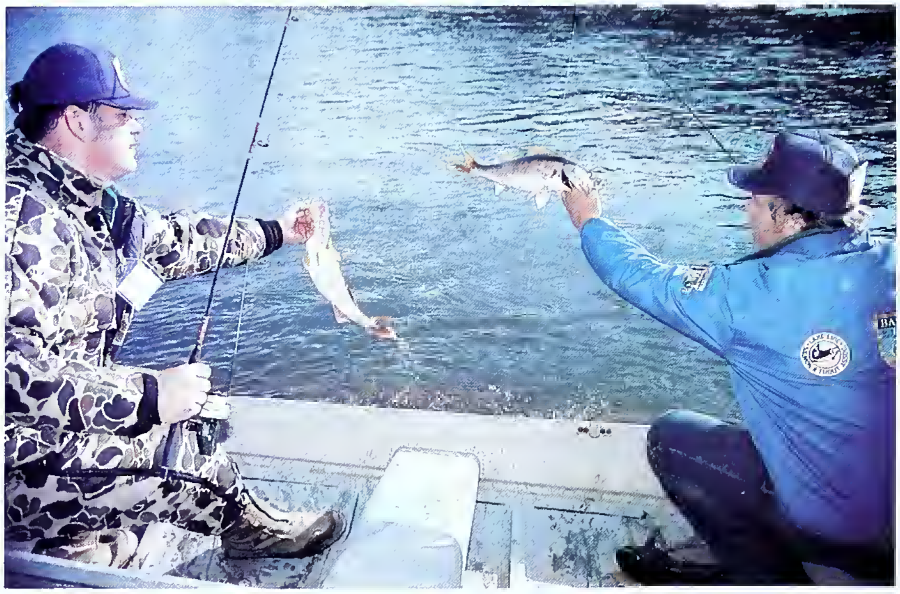


At left is a reproduction of a 1915 postcard showing Corry's "new" hatch house and garden-like grounds. Above are "demand feeders" for trout at Corry today. Bulk fish food storage units (top right) add convenience and save the Commission money.

A Winter

I watched the icicles outside my office window melt for a day-and-a-half, and then I turned on The Weather Channel for the local weather report. During spring, summer and fall I watch or read the weather reports every day. But sometimes in the winter I would rather not hear another prediction of snow and freezing temperatures, so I don't watch the weather report, and I skip that block on the second page of the newspaper. But the warming trend was evident and that is glorious news for a serious fisherman!

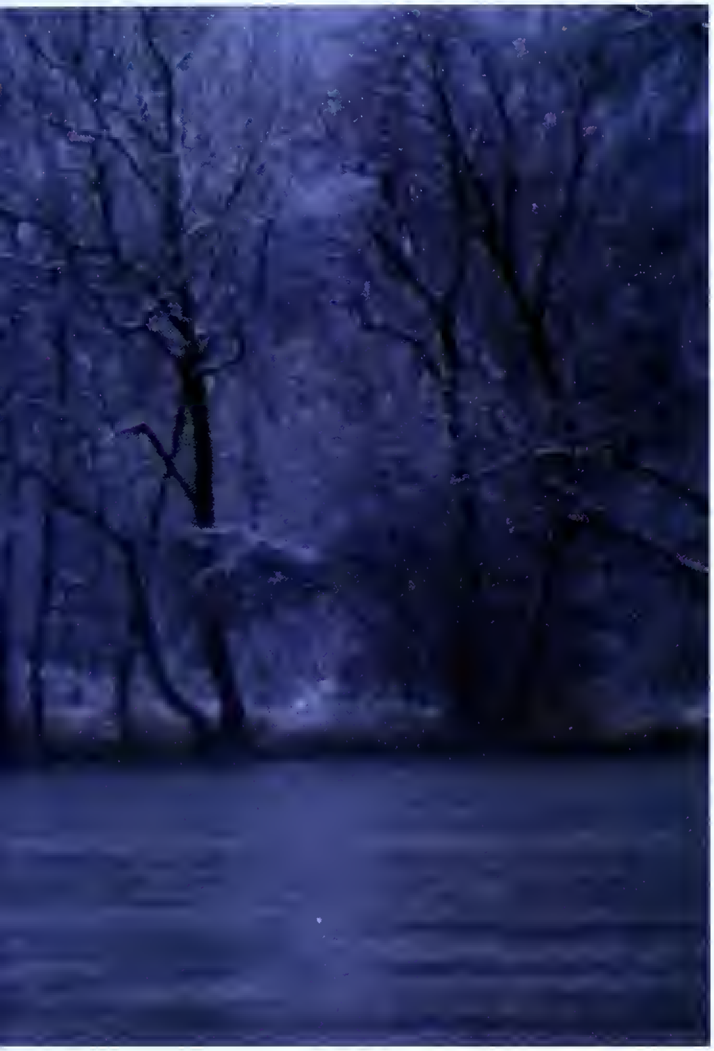
During the past few days, daytime temperatures had climbed into the high 30s, while at night the temperature had fallen no lower than the high 20s. Daytime temperatures were forecast to reach the mid-50s during the next few days, and nighttime lows would be in the mid-30s, before a cold system



Jeri Bleech

Warm Spell

by Mike Bleech



Mike Bleech

would move in from the northwest Friday afternoon. That gave me the rest of Wednesday—it was already mid-afternoon—then two full nights and a day-and-a-half of winter warm-spell fishing.

Plenty of daylight remained for me to load my fishing gear, bait and outboard into my truck, drive to the river where my brother's 12-foot aluminum boat was tied to a big sycamore tree, transfer the equipment to the boat, and still have several hours of fishing before the sun dropped behind the hills. My gear is always ready, and I keep minnows on my patio all through fall, winter and spring.

I motored a few miles upriver and then stopped the gas motor. I hooked a five-inch shiner onto the Fire Ball jig (a leadhead with a treble trailer hook) that was already on my line, and lowered it to the rocky river bottom. Then I just drifted with the slow current with my jig and minnow almost right under the boat.

It was mid-February, yet the day felt spring-like. The sky was about half soft blue and half clean-white clouds that looked like whipped cream. The sun, getting close to the horizon, looked like a cherry. As I gazed into the sky I felt a solid tick on the jig and minnow. A few minutes later I reached over the side of the boat to grab my first fish of the day, a plump 21-inch walleye. Looking back up at the sky the thought passed through my mind that the day looked like a giant walleye sundae.

As soon as I put the first walleye on the rope stringer, rebaited and got the bait back to the bottom, another walleye grabbed my rig. I used the oars to stay over the walleye, using a shoreline sight marker, and caught them one right after another until I picked a limit—each over 20 inches long.

I was reluctant to quit fishing then, but I figured it was better to get as much work done as possible that evening to free more time during the next few days of the warm spell. I turned on the running lights and glided back to the launch ramp with the motor idling.

A steady procession of ducks passed overhead in small flocks. Most were mergansers and goldeneyes. There were also buffleheads, mallards and others I could not identify in the dim light. They were flying upriver toward favorite nighttime retreats, one of which was the walleye hole I had just vacated.

My heart skipped a beat when a beaver slapped its tail on the water's surface. The *whack*! echoed off the steep river ridge. This alarm put a great blue heron to flight from the dark shoreline right beside me. I heard its shrill *aannkk!* cry before I saw it, and momentarily I stopped breathing. So much for tranquility.

The next morning I was back on the river about nine o'clock. During summer I would have set the alarm early to be on the water before daylight, but walleye are more inclined to be active during daylight hours in mid-winter.

I drifted with the mild current for a half-hour without a touch. Then I decided it might take more than a simple hook and splitshot minnow rig to interest the walleye. This rig had replaced the trailer hook jig after the rocky bottom claimed my last one. A bright-orange Phelps Floater in my small tackle box caught my eye. It caught a walleye within a minute, too. That could have been mere coincidence, but the walleye came quickly after that.

Perhaps the bright orange attracted the walleye. Perhaps the floater keeping the bait a few feet above the bottom was an important factor. I had experimented with both ingredients many times in the past, and found that either could be important at various times. But during this warm spell I was concerned only with catching some nice walleye. Experimenting was not on my mind.

By noon I had a limit of walleye, ranging in size from 19 inches to 24 inches. A northern pike somewhere close to 36 inches ate my floater and minnow. I worked the pike close to my net a few times before it cut the six-pound-test line. I was surprised it took so long when I saw the orange floater inside its gaping jaws.

My pal Bill stopped by the house soon after I got home to ask me out to lunch. I was just starting to fillet walleye when he rapped on the door. His stare indicated that fresh walleye might be more appealing than restaurant food. When I offered he quickly agreed. I rinsed the fillets of the smallest walleye, and then marinated them in red wine vinegar salad dressing while I filleted the rest of my catch.

As soon as I cleaned the rest of the walleye, I wrapped them and put them in the freezer. Then I cooked the fillets that had been marinating. After removing the fillets from the marinade, I coated them with flour by shaking them and the flour in a plastic bag. Then I dipped them in two beaten eggs. The last step before cooking was coating the fillets with Italian-flavored bread crumbs. I completed the process by frying the fillets in very hot peanut oil until they turned golden-brown. *Mmmmm!* Bill and I wolfed them down.

"When are we going walleye fishing?" Bill asked with a mouthful of fried walleye.

"How about tomorrow?" I replied.

"In the afternoon after work?"

"Earlier might be better," I said. "A cold front is supposed to move through sometime in the afternoon. I want to be on the water just ahead of that front. If the fishing is still as good as it has been for the past few days it won't take long to get our fish."

"Sounds good," Bill responded. "I'll be here late in the morning. I can work my hours around the fishing."

Bill tapped on my office window at about 10:30 the next morning. I was ready to go. We tossed his gear in the back of my pick-up and drove to the river where the boat was waiting.

Fine mist evolved to a drizzle before we got our lines into the water. It was so warm that we needed only light shirts under our rain gear, but we brought along warmer clothing in a waterproof duffle bag. The cold front was due soon. Mid-winter is a bad time to go on the water unprepared.

Bill had to rig his line when we got to our fishing spot, so I got my line in the water first. If the weather had been colder, Bill would have tied his first terminal rig back in the truck. But cold fingers would not be a problem this day, at least not for a while. He tied a 1/8-ounce chartreuse leadhead jig to his line, and while he was chasing just the right minnow around the bait bucket with the tiny bait net, I caught the first walleye.

"Hey!" Bill said with a grin. "The guest is supposed to catch the first fish."

"You're no guest," I said. "You've worn a groove in that seat."

I slid the walleye back into the river after pulling the hook from its lip.

"Aren't you keeping any walleye?" Bill asked.

"Anything that needs measuring is going back," I answered.

"But that was a keeper for sure."

Bill needn't have worried about getting enough walleye, because the fishing was fabulous. We hardly noticed the drizzle turn to heavy snow. Time passed quickly, yet I was surprised by now how soon darkness came. I pulled out my pocket watch. It read 3:45 p.m. No wonder night seemed to come early! Then I realized how the weather had turned. The surrounding hillsides that had melted to dull brown during the past few days were white again. The guides on our rods were clogging with ice.

Fishing had slowed in the last half-hour or so. Then the action stopped. We looked at each other and with a shiver one of us said, "It's cold!"

We reeled in our lines and gathered our scattered gear into our duffle bags. I pulled the starter cord once and the motor came to life. The trip back was cold, and I hurried as much as the motor could manage. The wind blew harder, upriver right in our faces.

We pulled the boat onto the bank and quickly tossed the fishing gear, motor, gas tank and oars in the truck bed. Then we turned over the boat and chained it to the big sycamore tree. The last things into the truck were our stringers of fish—a dozen walleye and one 30-inch northern pike.

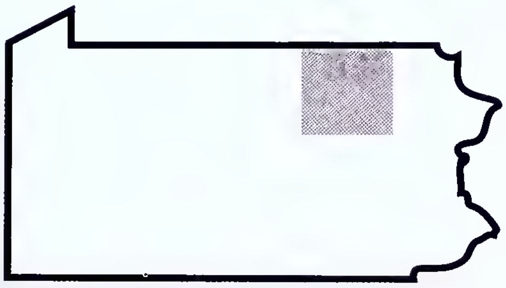
I started the truck as soon as I got out of the boat to get the heater going. The warmth felt good when we climbed into the cab, even though our faces and hands stung as the feeling came back to them. The windshield wipers grunted on the frozen water droplets as they wisked away a layer of snow. The truck tires spun for a brief moment before catching traction, and we headed for home. A cup of hot chocolate would be waiting. The winter warm spell was over.

Mike Bleech

Three for One

by Bill and Bert Schill

photos by the authors



Fishing opportunities are multiplied in northern Tioga County by three lakes within an approximate radius of 10 miles of one another. Cowanesque, Tioga and Hammond lakes offer a smorgasbord of fishing and scenery. They are close enough that if one doesn't fill the bill, it is only a short drive to another.

Each of these bodies of water is a flood-control project. Tioga Dam, on the Tioga River, and Hammond Dam, on Crooked Creek, provide the major flood control of the North Branch of the Susquehanna River as far south as Wilkes-Barre. Cowanesque Dam controls a 298-square-mile drainage basin and all three projects provide excellent recreational opportunities for boating, fishing and camping.

Hammond Lake, off Route 287, is about 10 miles north of Wellsboro. Tioga Reservoir is located on Route 15 above Mansfield, and continuing north on Route 15, you cross over the New York state line, then back to PA Route 49. Driving west, you come to Bliss Road and the South Fishing Access of Cowanesque Lake. Newest of the projects, Cowanesque was recently raised 35 feet for water storage and the construction of new facilities. The deepest part of the lake runs 80 feet.

Ramps at these waterways have docks to make launching and retrieving easier.

Water released into the spillways is electronically controlled so that the temperature remains constant where the fish school, providing protection from drastic changes that might harm them.

These projects are supervised by Richard J. Koeppel, Park Manager. He says, "We have some of the finest fishing in the country with a choice of walleye, largemouth and smallmouth bass, tiger muskies, pickerel, and channel catfish weighing 20 pounds or more. Crappies, bullheads and a smattering of other warmwater fish add to the menu.

Many of the species in Cowanesque, Tioga and Hammond lakes are stocked by the Fish Commission.

"There is excellent fishing in the Tioga Reservoir, which we never anticipated, and it seems to be on the upswing," says Koeppel. "Tioga Mill Creek has been stocked with brown trout, some reaching 21 inches. In Crooked Creek, out of Hammond Lake, jack dams and deflectors have been installed with a two-fold purpose. Mountain streams rise and subside quickly, creating a lot of damage. The way the logs are used to create the dams not only helps prevent erosion, but keeps the water oxygenated and provides excellent cover for native brook trout."

An interesting facility to visit while on a fishing trip to these lakes is the National Fishery Research & Development Laboratory, eight miles west of Wellsboro, off Route 6. Research into the ecology, culture, nutrition and health of Atlantic salmon, lake trout and the American shad is ongoing. The laboratory is open at no charge to the public Monday through Friday, 8:30 a.m. until 3:30 p.m.

Anglers who want to cast a line from the banks will find that all three lakes can be fished from shore. Along the highways there are places to pull off, park your car and walk down to the water. However, driving into the parks offers more opportunities to use the accesses provided for shore fishing.

Fishing from a boat is more convenient for moving quickly over the water, providing a choice of open water, deep channels, weed beds or wherever there is structure.

The Lawrence Recreation Area of Cowanesque Lake has a launch ramp adjacent to picnic facilities. The diversity of fishing grounds runs the gamut from open water near the spillway to a wilderness-like terrain at the opposite end of the lake.

Lambs Creek Access Road, at the southern tip of Tioga Lake, leads to a launch ramp with a dock. Hammond Lake has two boat launch ramps with docks, just inside the park entrance, in the Ives Run Recreation Area.

Horsepower is unlimited on all lakes, but there are "no wake" zones around launch ramps, swimming areas or where so posted. Fishing from the dams is also prohibited.

Angling can be enjoyed on these manmade lakes in surroundings of green, rolling hills and scenic backgrounds covered with tall trees. One of the favorite fishing spots on Hammond Lake is in front of the high stone-walled, gorge-like channel, separating it from Tioga Lake.

Baits, when to fish

Fishermen will find that many of their favorite baits and lures work well on these lakes. Crankbaits, spoons, and purple and black worms are popular. As for natural baits, try crawfish and grubs. Nightcrawlers and minnows are usually productive and can be picked up at tackle shops around Wellsboro and at McDivitts, one mile west of Cowanesque Lake, on Bliss Road.

Most of the activity takes place during spring, summer and fall, but winter brings out hardy ice fishermen. Manager Koeppel says, "Because it freezes faster and thicker than the other two lakes, up to 24 inches, Cowanesque draws more anglers. It is more predictable for getting people out on the ice and they pull all sorts of equipment out with them. Most anglers just sit in the open but some put up shelters, which have to be removed at evening. Nothing can be left on the lake overnight.

"Every winter we have an ice fishing derby because this sport is so popular. Crappies, and bass ranging in size from 22 to 24 inches, make the sport worthwhile."

Camping

The Ives Run Recreation Area has camping facilities for Hammond Lake. There are no individual hookups, but water hydrants are located at convenient spots and there is a dump station. In the family campground are flush toilets and showers. Twenty-nine hike or boat-in sites are also available.

At Cowanesque Lake, the Tompkins Area has family campsites for recreational vehicles and tents for a fee. Fifteen non-fee, primitive hike-in sites are also provided.

The 1,000-foot-deep Pine Creek Gorge, known as the Grand Canyon of Pennsylvania, and Wellsboro itself, lighted with old-fashioned gas lamps, are worth a visit. A bronze sculpture of Wynken, Blynken and Nod, from the famous poem by Eugene Field, adds a nostalgic touch to the town park.

This trio of lakes in Tioga County is just the ticket for wetting a line and being rewarded with "keepers." Sightseeing in this scenic area of the state also adds to a thoroughly satisfying fishing trip.

Fishing Lowdown

Robert E. Moase, Commission Area 4 Fisheries Manager, says, "Cowanesque is our newest lake and I am very optimistic about its future. The elevation of the water has been raised, creating 1,100 acres, which in turn produces greater habitat for gamefish, especially for shore fishing.

"We expect over the next few years that this lake will be one of the finest lakes in the northeast for walleye, muskies and largemouth bass.

"There are some fish in Tioga, but Hammond has been well-stocked with largemouth and walleye fingerlings and they seem to be holding their own. Catfish is another species that has been stocked.

"Fishing along the rock riprap on the western shore and the area near the dam seems to be productive. The location of these lakes is so structured that no matter what happens ecologically in one lake, it has no effect on the other two."

Paul F. Swanson, Northcentral Regional Law Enforcement Manager, says, "The lakes are patrolled by the regional law enforcement officers who make sure people are abiding by the laws, but we are all primarily interested in seeing that they are safe and at the same time fully enjoying their fishing and boating experience.

"We check to see that they have the proper safety equipment and we pass along information we gather from talking with fishermen. We can tell them where the best spots are and what baits and lures seem to be producing.

"We are also very interested in seeing that ice fishermen enjoy their sport safely. We check first-timers to make sure they are warmly clothed and fishing in safe areas. Here again, we are able to pass along information on what is biting, where, and the lures used. Bass and crappies seem to be the most popular catches during this season."

TIP-UP

Patterns for Success

by Roger Dalo

Looking down from the bridge, I could see a dozen ice fishermen dotting the lake. Identifying the various tip-up patterns created by each angler was easy. Most rigs were placed close to one another in circles, arcs, straight lines, boxes and inverted "V" patterns.

Were these different layouts the result of chance, habit, or part of a carefully planned strategy?

After spending almost 15 seasons on the ice, I am convinced that most approaches fall into three categories: habits, superstition (based on one successful outing years ago) and chance.

With just a little cold-water insight and knowledge of ice-time gamefish habits, you can drill ice holes in a pattern that can increase your chances of success with tip-ups. Here are a few considerations.

Water temperature

For much of the ice fishing season, water is warmest at a lake's bottom. This is so because water is most dense (and heaviest) at about 39 degrees. The surface may be frozen by winter's first arctic blast, but the lowest layer plays host to some relatively active gamefish.

Depending on a lake's geographical location, depth, date of freeze-up and climatic conditions, the bottom layer cools at various speeds down to 33 degrees. This cooling process takes from one to six weeks or more. During this time anglers catch the lion's share of winter gamefish.

Light

The next most important consideration is light. During the early season when little or no snow covers the ice, much light filters through to the water below. This keeps gamefish active, especially through mid-morning and again late afternoon until dark. Some of my most memorable experiences have come on crystal-clear days when the change in evening light intensity was at its greatest.

As snow cover builds on the ice, lake bottom light dims. Feeding periods become shorter. By a snowy season's end, only a full day's action may occur over the period of less than one hour, divided equally between dawn and dusk.

Knowing temperature and light considerations puts you in a position to match this information with the right tip-up pattern. Here are a few gamefish species and some successful tip-up tactics.

Walleye

Walleye often cruise along a lake bottom like an aquatic wolf pack. In an effort to capitalize on this behavior, many anglers place lines of tip-ups beginning near shore and ending at depths of 40 or more feet. Their strategy is to wait for a school of walleye to work its way along the shoreline and intercept one rig's minnows.

Others use a circle, which naturally places offerings at different depths. There are other patterns. All these can be effective, but each relies on the same principle: The fish come to the angler.

By most accounts I am marginally patient. Early in my ice fishing career, many flagless hours tested my low tolerance for boredom. During those ordeals I began to tinker with different tip-up configurations. I settled on a pattern of rigs that resembles absolutely nothing. I call it the "shotgun" approach—a shotgun loaded for walleye.

I am convinced that any tip-up placed within 20 to 30 feet of another rig actually competes with it for a walleye's attention. All that is needed is a single rig that draws feeding walleye (and other gamefish) from quite a distance to investigate a flailing minnow. This leaves your other tip-ups for use elsewhere.

These extra rigs should be set no closer than 60 feet from one another. In some situations, for example, during mid-day when nothing is moving, I have placed them up to 100 feet apart.

This method has some obvious advantages. First, each tip-up is an outpost, searching for signs of walleye feeding activity. And each is located in a different neighborhood. Walleye in one area sometimes feed more actively than do walleye in another area. If one rig becomes active, others may be moved to its vicinity. And with offerings spread so far apart, standard chores like clearing skim ice or checking baits and rigs require a brisk walk, and that helps keep you warm.

In addition, take along an extra minnow bucket or two. It is a good idea to have bait sources close to each tip-up. Owing to the distances between rigs, always take along your gaff for each flag. Home base may be too far away for second chances.

Muskies, northerns

Muskies and northerns present a little different challenge. They are nomadic, so they often have no single structure to call home. Instead, they roam over many acres of lake bottom in search of scarce coldwater food. They do, however, have an Achilles heel—a decided preference for steep or vertical structure.

Because these fish tend to be mobile and relatively active during the winter, finding prime habitat requires some knowledge of their summertime haunts. Once you have chosen a general target area, locate a series of bottom structure at roughly the same depth and in the vicinity of the bridge pier, steep bank or other large attraction. Now you can be pretty sure that old Esox is in the neighborhood.

Next, drill or chip a hole in the ice near the vertical structure. Lower your offering until it is about three feet off the bottom. This gives any prowling musky a much better view of your struggling minnow. Set the flag and then walk away. Save your remaining four rigs for other kinds of gamefish. You may be in for a long wait.

Bass

Taking winter bass is a little like playing pin the tail on the donkey. Unlike walleye, muskies and northerns, bass inhabit a relatively small territory. During cold-water periods they feed much less often, but they do feed.

To score you must be able to locate a specific structure such as a boulder, stump or other small-target area, and drop your offering almost at your quarry's front door. I call this the sentry method.

Once you have a target structure, drill an ice hole on either side, at least 15 feet apart. Use only one tip-up and about every half-hour alternate the rig between holes. For larger structure, drill more holes and rotate a single tip-up among them. Using this method you can cover five different structures at once.

Trout

The strategy for larger trout is a little like that for northerns and muskies. Often a single, well-placed tip-up can be as effective as two or three randomly placed tip-ups.

Trout spend a good deal of time cruising the shallow shorelines, where the light is brightest and food is sometimes washed in by small tributaries. So look for a small bay or inlet with a depth of at least four to seven feet. Locate your minnow-tipped rig as close to the mouth of the feeder stream as safe ice thickness allows (four inches of clear ice for a single angler).

After setting your rig, back off at least 50 or more feet, and check its bait no more often than absolutely necessary. Trout are sensitive to vibration and will spook at the sound of crunching snow and ice as you walk.

If trout are your only quarry, dot the remaining tip-ups well apart and along the shoreline for some distance. You will find the shotgun method almost as effective for trout as it is for walleye.

Finally, before you head out this winter, think carefully about how you will set up your ice rigs. Shake off the urge to use the standard methods and be ready to try a new approach. Then, when you gather some angling friends for a day's outing, you will all be treading on some new ice.

THE FACILITIES MAINTENANCE BRANCH

by Chuck Rupert

photos by Don Carey

Working behind the scenes out of the public eye, the Fish Commission's highly skilled facilities maintenance staff labors to keep hundreds of public areas open to fishing and boating. An oil spot on the shirt replaces the highly visible badge of the waterways conservation officer. The dust-covered dump truck is overshadowed by the easily recognized and eagerly awaited hatchery truck delivering its watery prey. Working out of the limelight, these professionals go unnoticed, but their work is important. To them this article is dedicated. Here's their story.

After 15 years as a fishing and boating facilities supervisor, it still pleases me to see people, especially families, making full use of our access areas for a day of fun and relaxation. Every year, thousands of outdoor enthusiasts use our facilities, but few are aware of the extent of Commission involvement in the access area program, let alone the role or even the existence of the Facilities Maintenance Branch.

The access area program started 25 years ago with the purchase of several sites. It has grown to include over 250 access areas throughout Pennsylvania. These areas are purchased or leased with money obtained from the sale of fishing licenses and boat registrations. The areas are open to public enjoyment. They offer the angler access to a diverse array of warmwater and coldwater fishing. Boaters have a selection of recreational or scenic lakes and rivers on which they can cruise.

Typical facilities offer a boat launch and a paved or gravel parking area, and they might include a primitive or modern comfort station. Some areas can accommodate overnight mooring (with proper permits, of course), and docks are often available where boat traffic is heavy.

In addition to the maintenance required for the upkeep of these improvements, impoundments owned or controlled by the Commission may include dams and water control structures. Access to some sites includes paved or gravel roads—some are several miles long. All of this, as well as many of the buildings and grounds used by other Commission divisions, is entrusted to the care of the Facilities Maintenance Branch.

Overseeing the maintenance of some 50 Commission-owned or Commission-controlled access areas in northeast Pennsylvania's 11 counties is a challenge I enjoy. Throughout the hectic summer months, busy crews in all six regions scramble to maintain the thousands of acres of lawns, miles of paved and gravel road, and hundreds of docks, boat launch ramps and comfort stations scattered throughout the state. As cooler weather approaches, the frenzied pace slows, allowing time for renovations to buildings, dams and control

The Facilities Maintenance Branch in the Northeast Region maintains some 50 Commission accesses in 11 counties. Statewide the Branch maintains some 250 accesses and Commission properties.

At left are some of the Northeast Region Facilities Maintenance Branch employees: (from the left) Jess Fink, Chuck Rupert, Larry Wandel and Dan Jenkins.

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HARRIS POND ACCESS
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towers, or major repairs and grounds maintenance.

Winter activities

The onset of winter is the ideal time to cut brush and remove dead trees. When the thermometer drops below freezing, crews begin repairing and repainting signs, and overhauling maintenance equipment and vehicles. By the time spring rolls around, maintenance crews suffer from cabin fever, ready to leave the warm confines of the workshop to begin the arduous task of preparing for the annual influx of anxious trout anglers as opening day draws near. And the cycle repeats itself.

Keeping several hundred areas safe and ready for use requires careful planning and coordination at both the central and regional level. Hundreds of routine tasks are always waiting to be done, and no two years are quite alike.

Mixed with the carefully planned maintenance schedules, time must be allotted for the unexpected. Spring floods often devastate river areas, turning routine fix-up into major renovation. Late thaws can turn gravel roads into mud bogs at a time when trout fishermen are anxious to pursue their sport.

By the time the kids leave school and folks by the hundreds descend on our public areas, mowing and clean-up of facilities is in full swing, leaving little time for anything else. Yet, dams and water control structures often demand immediate attention.

Adding to the summertime burden of the unexpected are major projects that cannot be done in cold weather. Cost-saving projects, such as asphalt seal-coating, come around to each region on a five-year cycle. This program must be worked into frantic summer schedules. Precious time must be diverted to the many hours of manpower needed to clean and seal cracked asphalt parking lots and roads, preparing them for a coal-tar dressing designed to keep water out and rejuvenate the surface for longer life. Such projects are a vital part of the Commission's goal of preventive maintenance.

Asphalt seal-coating program

Jim Heimbaugh, manager of the Commission's five maintenance regions, was recently recognized by the Commission for cost-saving as a result of his initiating the asphalt seal-coat program. In addition to minimizing long-term maintenance expenditures, Jim set goals for providing quality maintenance throughout the state by offering fishermen and boaters facilities that are safe and convenient to use. Read the item on page 18 for details on Heimbaugh's award.

Working under Jim's guidance, the

five facilities supervisors track and schedule most of the routine jobs in their regions. Major projects are, of course, carefully discussed with him. These larger tasks are often coordinated with the Construction Section or with private contractors, if needed. But the backbone of the Commission's access area program is our own maintenance staff.

Budget restrictions mean crew sizes must be trimmed. A 1982 survey showed that for every employee in our division, there were about 11 sites to maintain. That works out to about 1,200 acres per man. Yet, only about one dollar from every fishing license buyer is needed to support the access maintenance program—not a bad deal for year-round use of several hundred access sites.

Jack of all trades

To obtain this efficiency, crew members are carefully selected for diversity and proficiency in a large variety of trade skills. As an area manager I have had the pleasure of training, working with, and learning from some of the finest jack-of-all-trade employees anywhere. I'm talking about highly skilled professional tradesmen who exhibit versatility, ingenuity and adaptability as a daily on-the-job requirement.

In my own crew of four men we routinely perform such diverse skills as welding, repairing motorized equipment, operating light and heavy equipment, grading roads, carpentry, electrical and plumbing work, and stone masonry and concrete work.

These men often work long hours under adverse conditions. The same fellow you see sealing asphalt on 150-degree pavement can probably be seen felling trees six months later in 20-degree weather. They are often required to make on-the-spot repairs with little or no preparation, requiring imagination and unique solutions. In short, they have to be equipped to fix anything anytime, anyplace—and do it well!

If you get the impression that I appreciate my crew, you are right. Their dedication to their careers is reflected in the fact that their employment time with the Commission averages around 16 years. That is over 80 years combined experience serving the public in the Northeast Region alone.

You can help

Though we are always looking for better ways to meet the needs of the rising population of outdoor enthusiasts, there are ways you can help. Treating the public facilities as though they were your very own goes without saying. A major step you can make is to take home any trash that you bring with you. Collecting refuse is not only time-consuming, but the cost of disposal has doubled in the last year.

Consider supporting legislation that imposes a deposit on bottles and cans. It works. For example, the incentive created by rewarding those who recycle aluminum cans has resulted in a drastic reduction of that kind of litter. Not having to pick up soda cans means more time can be devoted to other maintenance tasks. Your actions can decide if time and money go to access maintenance and improvement or to hauling garbage.

There are occasional glimpses of oncoming spring outside my office window. The apprehension of implementing an imposing spring schedule is tempered by the desire to be free of the confines of our shop. After a long winter I am certain that many of you are equally as anxious to hit the water, so we will be seeing one another soon. Enjoy the season!

Chuck Rupert has been the Commission's Northeast Fishing and Boating Facilities Supervisor for the past 15 years. After graduating from Penn State's four-year forest management program, he worked to acquire skills in various building trades. He was temporarily employed for a year by the Fish Commission, building the hatchery at Fisherman's Paradise. After leaving for a year-and-a-half to work as an independent contractor, he opted to go back to the Commission in the position he now occupies.

Jim Heimbaugh Receives Commission Cost-Savings Award

Recognition for cost-savings was recently awarded to Jim Heimbaugh, manager of the Commission's Facilities Maintenance Section. After educating himself and his staff in pavement maintenance, Jim initiated and implemented the asphalt seal-coat program to reduce repair and replacement costs of our half-million square yards of paved roads and parking areas.

Only in the second year of a five-year plan, Jim's crews have already saved more than $170,000 by doing the work in-house as compared to a contractor's price. This figure includes the costs of materials, labor and equipment depreciated over a five-year period.

Additional long-term savings in maintenance and replacement will continue to accrue over the years because the process can extend the life of sound pavement indefinitely beyond its normal 15 to 20 years.

Procedures include sealing cracks with rubberized compound, followed by a complete dressing with a coal-tar and sand emulsion. The benefits include keeping surface water from penetrating and freezing in the asphalt, slowing the aging process, and renewing the wear-resistant surface. An added benefit is the improved appearance.—*CR*

KIDSPAGE!

by Steve Ulsh

Through the Year with the Garter Snake

October - *Hibernation*

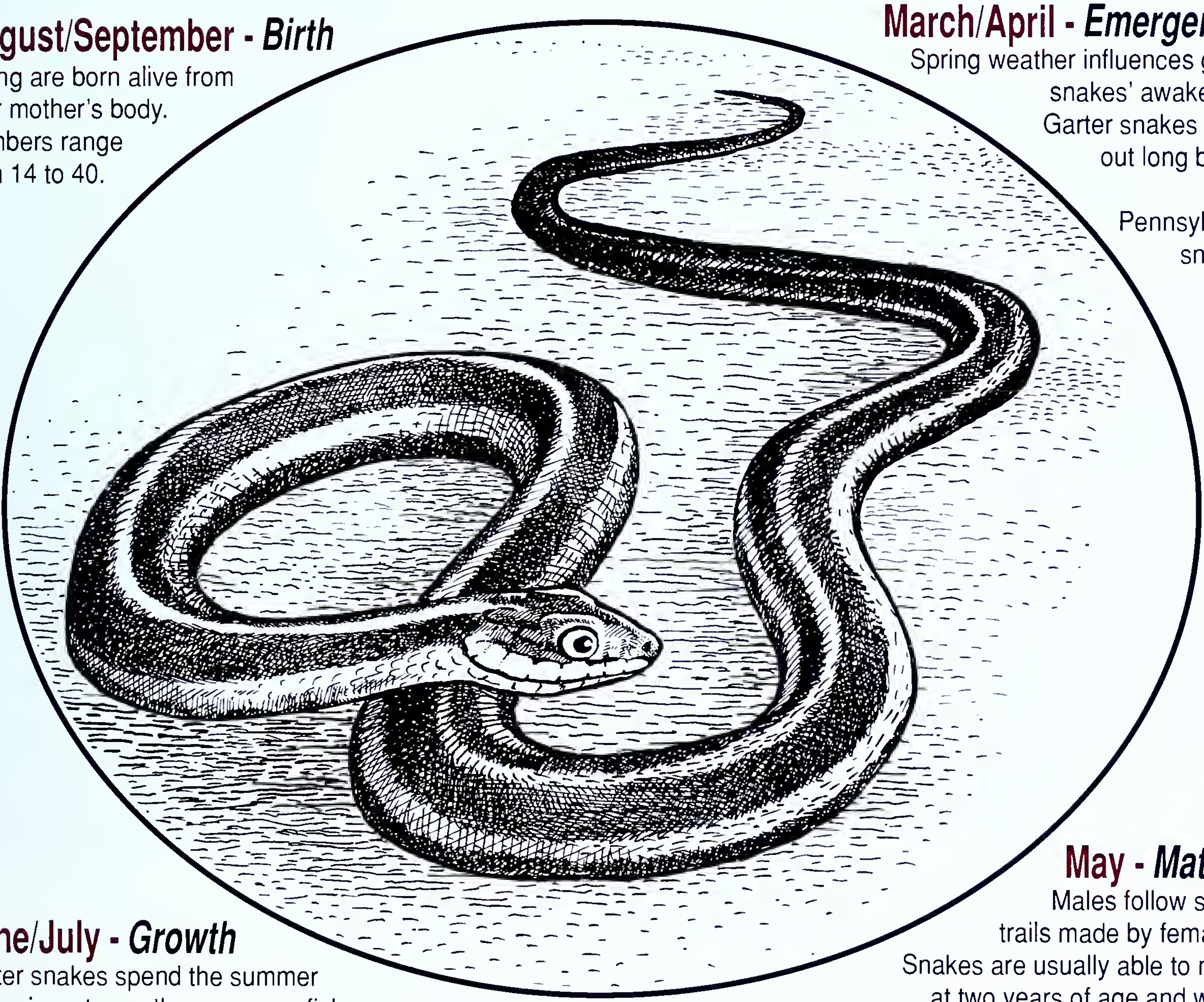
Garter snakes gather in one place for the winter. They use holes, mud, rotted wood, fallen trees and streambed rocks.

August/September - *Birth*

Young are born alive from their mother's body. Numbers range from 14 to 40.

March/April - *Emergence*

Spring weather influences garter snakes' awakening. Garter snakes come out long before other Pennsylvania snakes.



May - *Mating*

Males follow scent trails made by females. Snakes are usually able to mate at two years of age and when they're about 20 inches long.

June/July - *Growth*

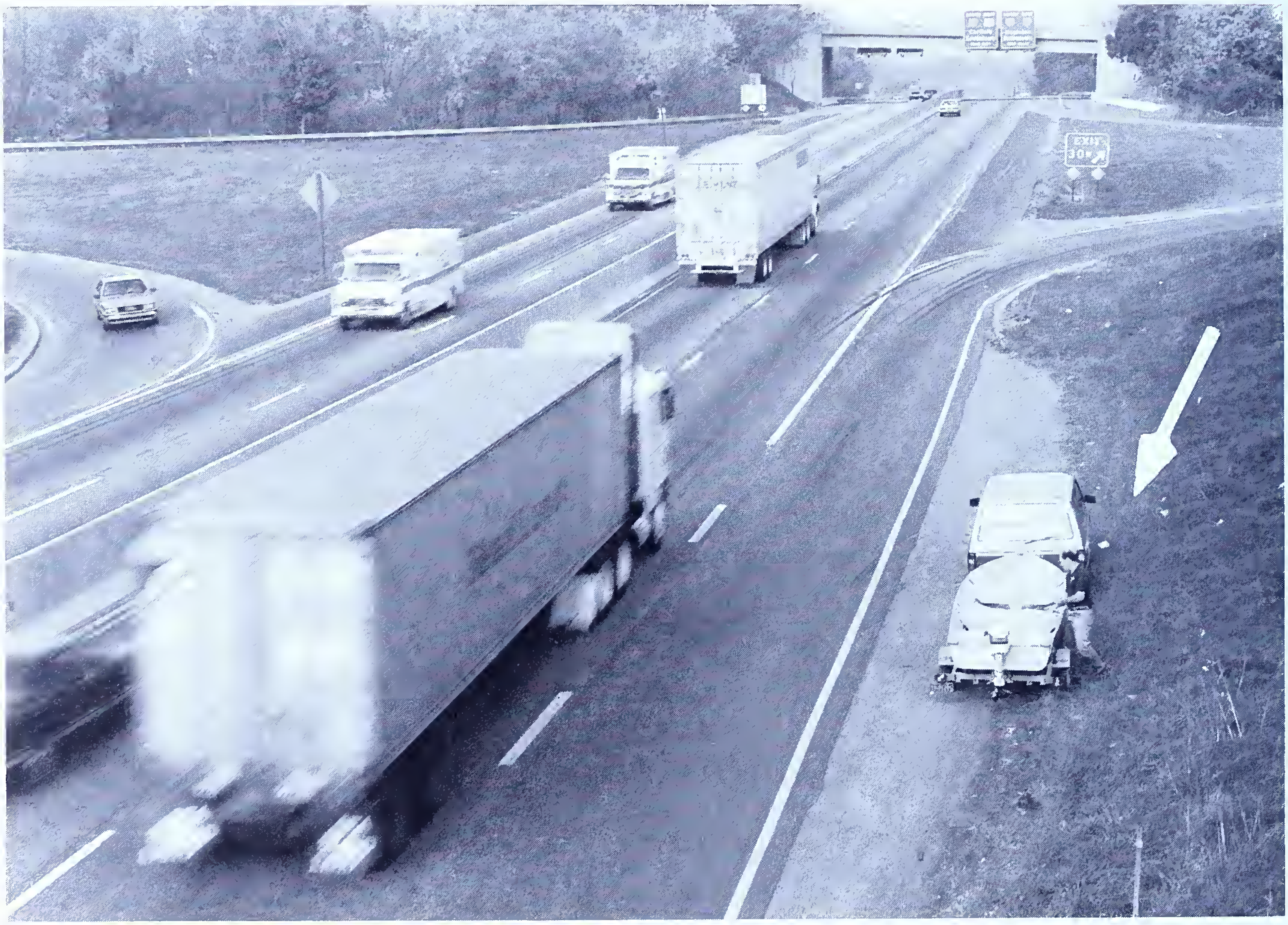
Garter snakes spend the summer eating insects, earthworms, crayfish, frogs, toads and other cold-blooded animals.

Conservation Note: Snakes have many natural enemies such as birds, large frogs, other snakes and some warm-blooded animals such as raccoons. If you see a garter snake, don't kill it. Give it a chance to do its part in nature's plan.

illustration- George Lavanish

Essentials for Trailering Small Boats

by Art Michaels



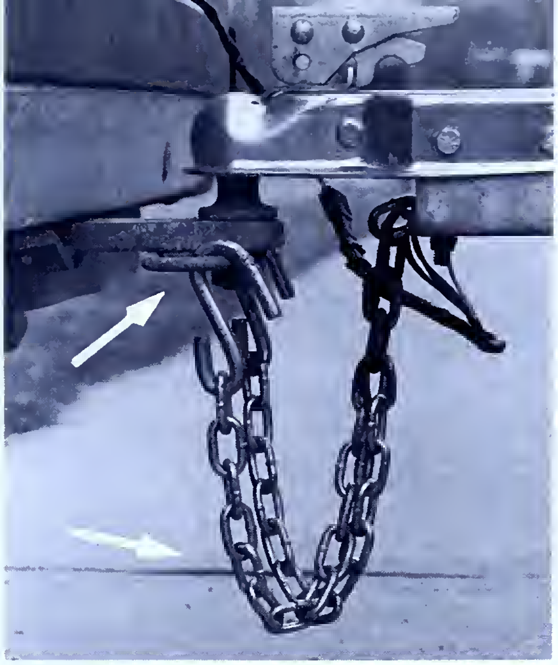
Rig your boat's gunwale tie-down strap so that you adjust it from the right side of the boat (arrow). If you must pull over to the side of the road to make an adjustment, the rig stands between you and oncoming traffic.

photos by the author

I trailer two boats—one, a 16-foot center console with a 65-horsepower engine, the other, a 14-foot open aluminum semivee with a 9.9-horsepower engine. I've learned that trailering a small, light boat is like trailering nothing at all compared to pulling a bigger, heavier rig. If you've hauled two different-sized boats, you know what I mean.

But that's dangerous thinking. Because hitching up the smaller rig feels like not trailering at all compared to pulling a bigger rig, it's easy to neglect vital small-boat trailering maintenance, preparation and safety points. That leads to trouble for unsuspecting trailer-boaters.

Consider a typical small, light rig from front to back and take a close look at some basic ideas for hauling a small boat. In the long run, they'll save you money with fewer repair bills, and they'll help you trailer safer and more efficiently.



Place the S-hooks (top arrow) through the hitch rings from the bottom up. Cross the safety chains (lower arrow) beneath the trailer tongue.

Think about tongue weight first. It's important for two reasons. For one thing, the correct tongue weight best prevents fishtailing. For another thing, a tongue weight that's too heavy can lift the tow vehicle front tires enough to make steering and braking difficult.

Trailer manufacturers suggest that the tongue weight for a small boat should be five to 10 percent of the fully loaded trailer weight. Contact your tow vehicle manufacturer to learn any special towing requirements, which might also include specific tongue weight recommendations for your vehicle.

To determine tongue weight, you must first know the weight of your fully loaded rig. You could estimate this amount because you can guess the weight of everything. But you obtain the most accurate figure by weighing the fully loaded rig on a truck stop scale.

Weighing your trailer at a truck stop scale costs only a few dollars. Be sure to detach the trailer from the tow vehicle and place the entire trailer on the scale.

Then use a bathroom scale to weigh the trailer tongue. Place the scale on a chair or other support so that it's the same height as your tow vehicle hitch ball. Place a piece of wood, like a foot-long two-by-four, on the scale first, and then rest the trailer tongue on the wood. This ensures that the tongue weight is distributed evenly on the scale. Of course, the trailer needs to be on level ground.

Changing tongue weight

On most small-boat trailers, you move the winch stand to change the tongue weight. Move the stand away from the boat to increase the tongue weight. Shift it closer to the boat to decrease it.

On some trailers you can also move the axle and suspension assembly to change the tongue weight, but this adjustment is more difficult than moving the winch stand.

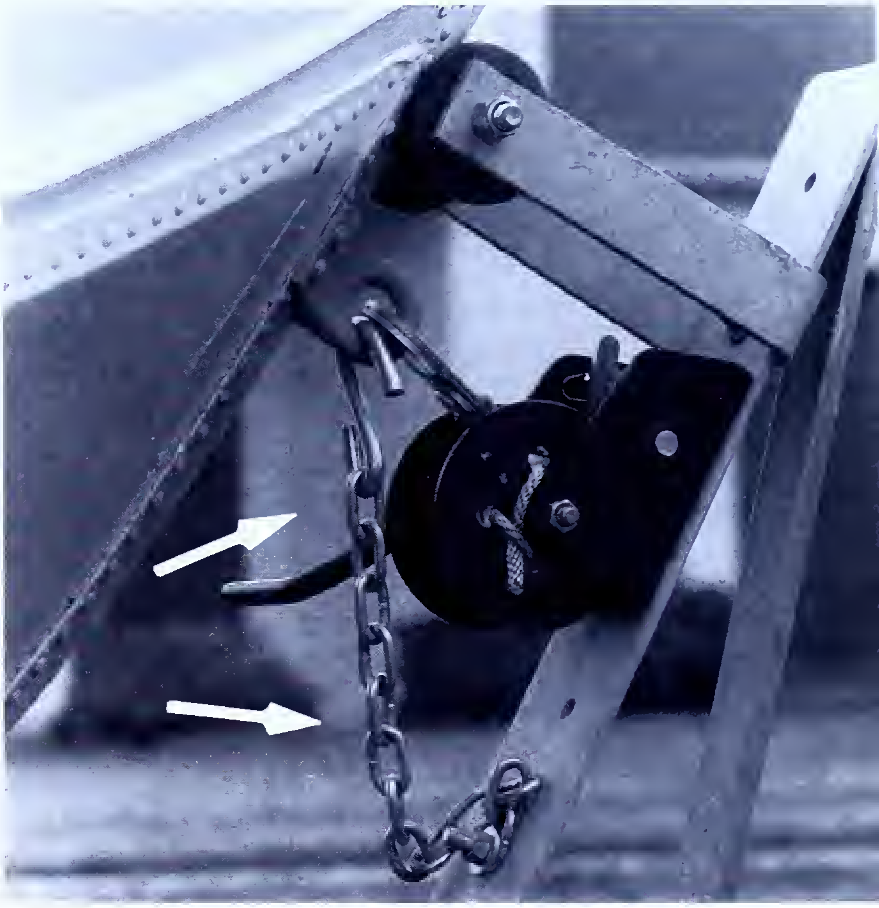
If you make an adjustment on your trailer to change the tongue weight, you may have to readjust the bunks or rollers to reseat the boat firmly. If your trailer has rollers, or a single rear roller with bunks, be careful not to move the winch stand so far forward that the boat stern falls in front of the rear-most roller.

Distributing gear evenly in your boat and tow vehicle is another way to get a safer, more efficient ride. Remember that a full six-gallon gas tank weighs about 45 to 50 pounds, a battery weighs about 50 pounds, and a large cooler with ice and food can weigh 50 pounds or more.

Winches

Look now at the winch. One vital safety consideration is to trailer your boat with a bow safety chain in addition to the winch rope or cable. If the winch rope or the winch itself fails on the highway, the safety chain can prevent the boat from flipping off the trailer. You can imagine the accident that could occur when a bow winch or rope fails without a safety chain.

Take a close look at your bow winch rope. You most often pull off the most rope during retrieval, so the best time to inspect the bow winch rope is when you're ready to retrieve the boat. If the rope is frayed, replace it. New winch ropes are inexpensive, valuable insurance against what could be a serious trailering problem, so don't skimp here.

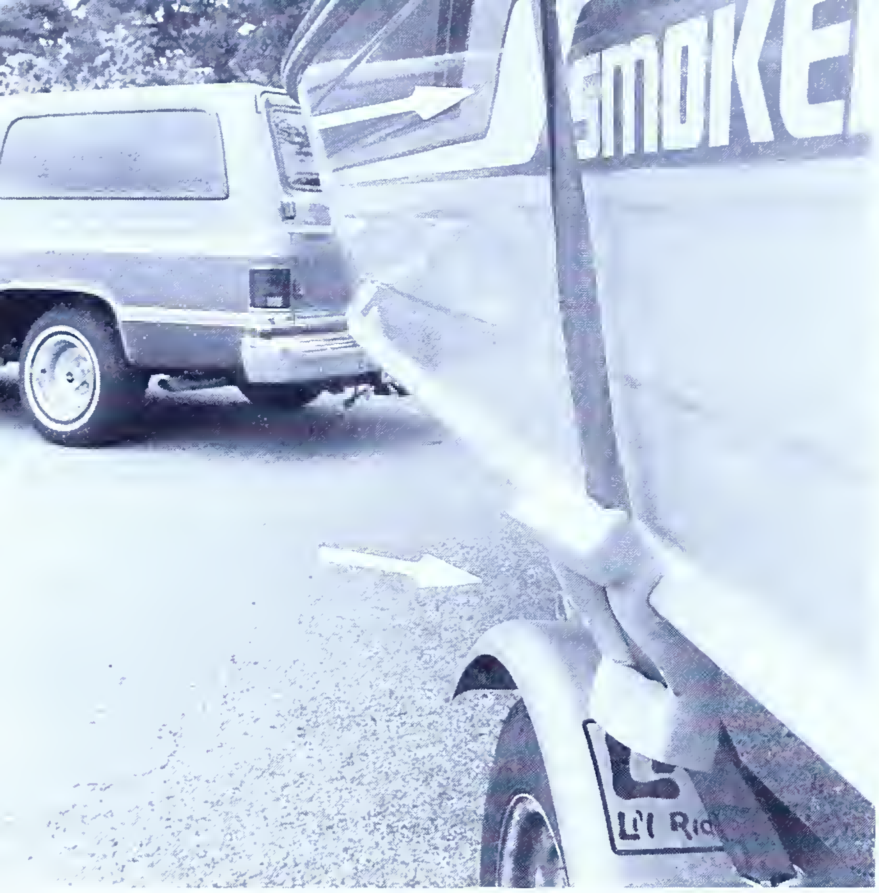


Always trailer your boat with a safety chain (arrows) in addition to the winch rope. If the winch or the rope fails, the safety chain can prevent the boat from flipping off the trailer.

Gunwale tie-down strap

A gunwale tie-down strap is the most common method of securing a small boat on a trailer. The first consideration is to place the gunwale tie-down strap so that you adjust it from the trailer's right side. If you need to adjust the tie-down at the side of the road, the trailer will be between you and oncoming traffic. You can appreciate this strategy best if you imagine needing to tighten the tie-down in heavy traffic at night, in fog or during a rainstorm.

Next, be sure to twist the tie-down one or two times between the J-hook attachment and the top of your boat's gunwale. Twisting the strap prevents its vibrating and beating against the hull. This punishment can loosen the strap. It's also like taking sandpaper to your boat hull. This kind of damage can



Twisting the gunwale tie-down strap (top arrow) prevents it from beating against the hull, which mars aluminum and fiberglass. A foam block (lower arrow) through which you thread the strap also stops the strap from chafing the hull.

ruin the finish on new aluminum and fiberglass boats within the first season.

Cut two brick-sized blocks of closed-cell foam and then in each block make two, two-inch slices, each slice close to each end. Thread the gunwale strap through each block and place them so that they cushion the boat hull where the strap would touch the hull. This ploy also prevents a rubbing strap from marring your boat hull.

Even the shortest commercially available gunwale tie-down strap might be too long for your small boat, so after you tighten it, tie the loose end securely to the rest of the strap. This prevents the loose end from flailing in the wind, which could loosen the strap.

Tires

Look at your trailer tires. If you trailer your boat with eight-inch tires, replace them with 12- or 13-inch tires. Safety and economy are the name of the game here. Eight-inch tires fit perfectly into potholes and ruts, and each time you hit one of these obstacles your boat and equipment take a beating. Twelve- and 13-inch tires are big enough to ride over most potholes and span most ruts.

In addition, over an equal distance, 12- and 13-inch tires revolve fewer times and spin slower than eight-inchers, so you get better wear with the bigger tires. As a general trailering rule, use the biggest tires that fit your trailer. Trailer capacity information, along with the trailer's minimum matching tire size and inflation, appears on a sticker or plate on a trailer frame member.

Underinflation and overloading are the enemies of trailer tires. Always keep your trailer tires fully inflated. You will find the correct psi (pounds per square inch) molded into the sidewall.

When you adjust tire inflation, use a pencil-like pressure gauge. Never depend on the gauge in a gas station air pump because these devices are often inaccurate. I use a bicycle gauge, not one made for automobile tires, because the bike gauge measures the higher pressures that most trailer tires require.

Hubs

Check out the part of the trailer that gives boaters the most headaches and most frequent repair bills—the hubs. Small, light trailers have bunks more often than rollers, and for launching and retrieving, trailers with bunks need to be submerged more than do trailers with rollers. For this reason, the hubs on small-boat trailers get dunked often and suffer the most.

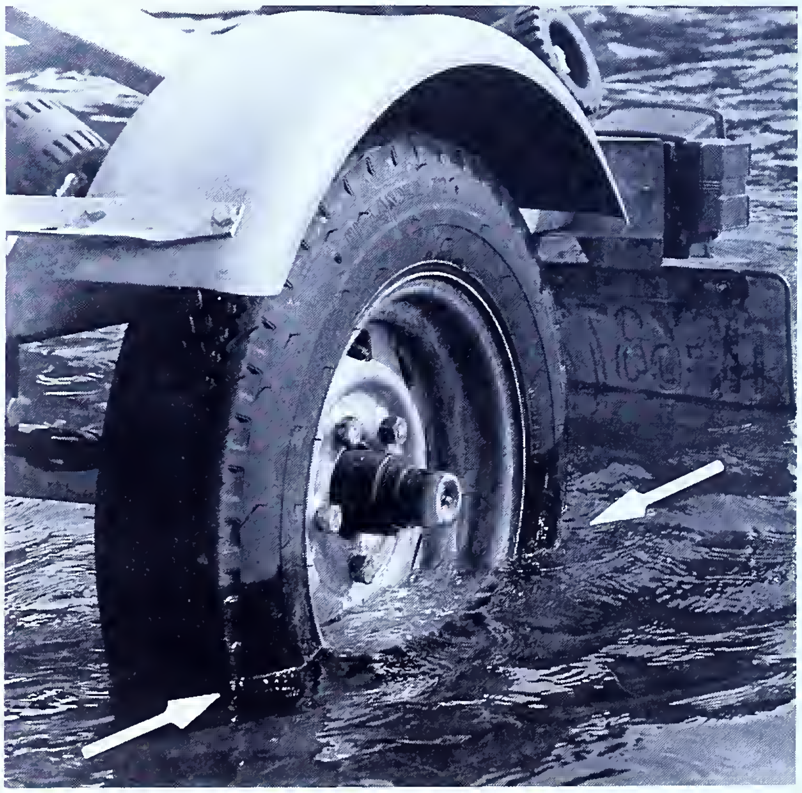
The problem with submerging hubs repeatedly is that the air inside the hubs warms from trailering. Sinking the hubs in water cools the air in the hubs. As the air cools, it contracts and creates a vacuum that draws water and dirt into the hubs.

The water rusts the bearings, races and seals, and sooner or later, the bearings fail to turn smoothly. Breakdown is inevitable. A common symptom of bearing failure is a squealing noise in the hub while under way.

Head off hub problems early by examining the hubs now and then. Prop up each trailer wheel and spin it with your hand. Listen. Do you hear a grinding, gritty noise? If you do, your hub might be filled with water and dirt, or the bearings may be damaged. Hubs in good shape spin quietly.

You can prevent hub problems by using some kind of bearing protector on your trailer wheel hubs. The investment is well worth the cost.

Bearing protectors replace the hub caps. The mechanism holds a small amount of grease with slight pressure (about two



If your trailer has rollers, you hardly ever have to sink the wheels farther than this (arrows). If your trailer has bunks, you probably do have to sink the hubs to launch and retrieve. In either case, using bearing protectors on the wheel hubs and maintaining them best ensures trouble-free trips.

or three psi) against the hub's inner parts. This slight pressure prevents water from entering the hub assembly when you dunk the hubs.

Inspect the hubs often to make sure that they are holding the correct amount of grease. At least once a season replace the bearings and other internal hub parts. A convenient time to do this is when you winterize your boat in the fall. Let your dealer do this task because replacing some internal hub parts requires special tools and precise tolerances.

Occasionally your bearing protectors may need a shot of grease, but never overfill them. Overfilling can break the inner seal, which renders the bearing protector useless.

Outboards and trailering

Take a look at your outboard. When you travel, do you tilt the engine all the way up in the traditional "trailering" position? Your outboard probably has plenty of road clearance in the "run" position. It's better to keep your motor in the "run" position than higher in the "trailering" position because it better cushions the transom during the jolts of driving, and it requires less support for the engine. This lower position is also easier on both the engine and the boat transom.

Many small-boat trailers hold the boat high enough off the road so that the outboard can be trailered safely in the engine's lowest "run" position. Nevertheless, to gain more road clearance under your engine while you trailer the boat with the motor in the "run" position, move the motor's tilt pin to a setting that's farther from the transom.

Remember that even though towing a small boat might feel as if you're trailering nothing at all, your small, light rig needs plenty of TLC. This reduces the chances of incurring costly repair bills and keeps you safer on the road and at the ramp.

Towing a small boat might seem like towing nothing at all. Nevertheless, giving your rig plenty of TLC minimizes repair bills and keeps you safer on the road.

Taillight Tale

Check out your trailer's taillights when you use the turn signals. Do the lights flash quickly and only for the shortest duration? Most likely the problem is that your tow vehicle's flasher, the device that makes the turn signals work, isn't powerful enough to handle the extra load of the trailer lighting.

Pennsylvania vehicle equipment standards for safe operation require that turn signals flash no fewer times than 60 per minute and no more than 120 per minute. If your original equipment flasher doesn't allow this operation, your rig violates the standards.

The solution to this problem is to replace the original flasher with a heavy duty one. The flasher is located on or near your tow vehicle's fuse panel. It looks like an inch-deep cylinder with a plug on it. Check out your owner's manual if you're not sure where to locate the flasher or how to identify it. You can buy a heavy duty flasher at automotive supply stores for a few bucks. Replacing it requires simply pulling out the old one and plugging in the new one.

This quick change makes the turn signals flash normally. That's easier for other motorists to see and makes you safer on the highway.—*AM*

The Adaptable, Prolific Garter Snake

by Clark N. Shiffer

One of the most familiar, adaptable and prolific of Pennsylvania's 21 snake species is one called the "gardener," "garden," "gartner," or garter snake (*Thamnophis sirtalis*). The specific name *sirtalis* is a new Latin word meaning "like a garter," an allusion to the similarity of form, color, or striped pattern shared by the elastic band and the living animal.

Pennsylvania garter snakes represent one of 12 variously colored or patterned subspecies distributed from Alaska east to Nova Scotia, Canada, south through Florida and eastern Texas, northwestward to Oregon, and south through California. Isolated populations occur in Texas, New Mexico and northwestern Mexico.

The Pennsylvania subspecies is found throughout the Commonwealth. It ranges from southern Ontario, Canada, south through Florida, and west to eastern Minnesota, Iowa, Missouri and Texas. This wide distribution is testimony to the garter snake's tolerance for a great variety of habitat types in the relatively humid and lightly forested portions of the country. Not infrequently found in the wetter portions of their habitats, garter snakes may seek refuge in water when alarmed. They also frequent relatively dry vacant lots, or overgrown yards.

Hibernation generally begins in October, when several individuals may converge on a particular site. Winter quarters range from holes, rock crevices, mud, anthills, rotted wood, uprooted trees and house foundations to the underside of partially or completely submerged streambed rocks. Hibernating individuals are often only 1.5 feet to 2.5 feet below the ground surface, and some are known to have tolerated subfreezing temperatures for extended periods. Some individuals may temporarily emerge from hibernation during mid-winter warm spells.

Garter snakes often share winter quarters with other nonvenomous snakes, and are also associated with rattlesnakes and copperheads or occasionally amphibians. Depending on the weather, spring emergence from hibernation may occur anytime from mid-March to April, usually well ahead of the emergence of other snake species that are less tolerant of early spring temperatures.

Soon after breaking hibernation, males begin to seek females, which they locate by following scent trails. Mating activity occurs primarily at this time, but may also occur in the fall before hibernation. Sexual maturity may be reached the second spring after birth in males at a length of less than 20 inches and during the second year in females at a length of 20 inches or more.

The young develop internally and are born alive primarily during August and early September, but late June and July births are recorded. The number of young may range from three to 85 per brood, but is usually 14 to 40. Parturition, or the actual birth process, may require several hours. Like their parents, the four- to nine-inch young possess musk glands that are larger and more conspicuous in the female. Growth is relatively rapid the first several years and some snakes may reach a length of 48 inches. Most attain a length of 18 to 26 inches, the largest of which are usually females.

Joe McDonald

Although born near the hibernation site, the young garter snakes, like the adults, range widely away from this site during the summer. Depending on the nature of the habitat, anywhere from five to 35 acres might constitute a home range. The largest home ranges are those of adult males. All individuals seek cover under various objects during periods when temperatures are highest.

Food is primarily cold-blooded animals such as earthworms, slugs, leeches, insects, crayfish, mollusks, amphibians, fishes and other snakes. Younger individuals tend to prey more heavily on these food items, but larger individuals may also consume young birds, small mammals or occasionally carrion.

The sense of smell is undoubtedly well-developed in garter snakes and is used to locate others of their kind as well as prey. The musk glands at the base of the tail of both sexes and secretory cells in the skin produce scented substances that enable garter snakes to communicate their sex and specific identity to others of their kind.

Most newly captured garter snakes void a combination of excrement and musk gland secretion from the vent, which often lands on, or is otherwise transferred to, the unwary captor. This malodorous "offering" often gains the unwilling captive instant, though possibly temporary, freedom. Many newly caught individuals also bite, but the physical and mental consequences of this defensive tactic are of no concern to the captor, comparatively speaking. Captive garter snakes soon lose any propensity to employ either tactic.

At least one captive garter snake is known to have lived a minimum of 10 years, but most wild individuals probably do not attain an age much beyond that.

Both young and adults are preyed on by a variety of birds, mammals, amphibians and other reptiles, and in direct and indirect ways, man's hand has been turned against them. Thus far, the adaptability and prolificacy of our garter snakes have kept them ahead of a variety of threats to the integrity of our shared environment. In the future, with a little help from us, they can continue to be one of the commonest and most familiar species of Pennsylvania snakes.

Clark N. Shiffer is the Commission Herpetology and Endangered Species Coordinator.

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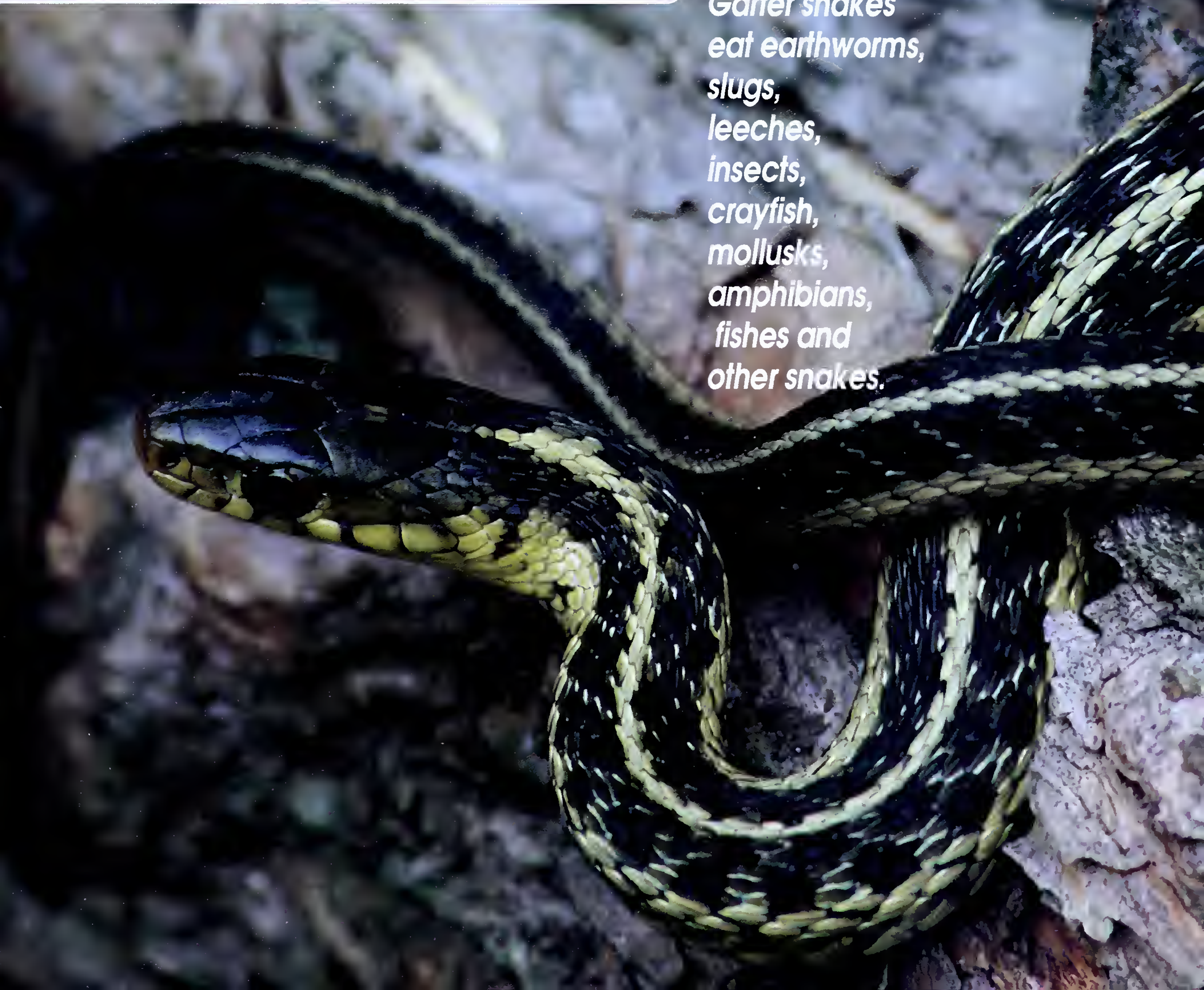

Dog Days on the Juniata

by Dan Martin

Art Michaels

Thick fog covered the Juniata River, ideal conditions for late-summer smallmouths. I tested my line, checked the reel drag and cast toward shore. The fog turned lighter shades of gray as full daylight approached. Sitting alone in this eerie environment I fantasized about a big bass stirring in its lair as the waters above gradually lightened. I imagined I could sense the bass working its way through the dark water toward the river bank to feed.

Lost in these dreams, I had been casting for a few minutes when the surface of the river erupted as my fantasy unexpectedly came true. A large bass slammed my plug and dived out of the water 10 feet from my john boat. One shake of its bronze head tossed my plug back at the boat. I shook my head in disgust. That was a good one and large smallmouths are rare during the dog days of August. It was early, though, and I intended to fish until noon.

My attention was drawn to something moving through the fog near the boat. I expected the sudden explosion of flushing geese and was surprised to see a deer swim into view. I was close enough to the old doe to see the surprise in her eyes when she noticed me drifting toward her through the fog. She twitched her ears and headed for the near bank. It had been hot and muggy lately and I was sorry I had disturbed her early morning swim. She scrambled up the short slope and disappeared from sight.

A short jigging rod leaned against the transom in the stern of my boat. It was baited with a big shiner and was gently being pulled behind the boat, drifting in the sluggish current. I had just enough line out to keep the boat from interfering with an attack on the shiner. Seeing the rod tip dip out of the corner of my eye, I reached out with my left hand and softly picked up the rod. It jumped in my hand and I set the hook.

Whatever was on the other end took off. I knew it wasn't a bass because the fish stayed deep and felt too big. I put down the rod in my right hand and quickly loosened the drag of the reel on the jigging rod. Maybe luck would be in my favor and it would be a musky. The fish acted like a muskellunge, strong and staying deep.

I raised my rod tip as the fish tugged and strained to stay away from my boat. A quick glimpse of a large whiskered face deflated my hopes. The big channel cat dived, making another hard run, and I had to open my bail, but the old river dog was well-hooked. A short time later the spent fish was in my net. The big cat, a credit to his species, had fought so nicely that I rewarded him by throwing him back. It was too early in the day to keep fish, and it was already getting hot.

Drifting along, I kept plugging away and keeping an eye on my dead line with the shiner. Daydreaming, I began thinking of the 30 years I have been fishing the Juniata. I remembered my first night float with my father and the horror at having dobsonflies smack into my face in the dark. Dad told me to quit whining, that dobsonflies don't bite and that I would get used to it. All evening the bass had been clobbering his surface plugs. He thought it was unsporting to use anything but artificials to fish for bass. He used to say, "Boy, if you need fish that bad, we can go to the market and buy some."

A lot of what Dad taught me about the outdoors has influenced me greatly. It was more than just teaching me to fish. He taught me to respect the resource. He always returned the fish he caught, carefully wetting his hands before handling them. Today, we call this "catch and release." Dad is gone now, but I think of him often, especially when I see an old man fishing the river in a small boat, plugging around the rocks.

It was still early when the sun burned off the fog. The loss of the fog's insulating cover changed the situation and decreased my chances for a big bass. I was now floating in deeper water so I switched plugs. To get it down I stuck my rod tip into the water and reeled faster than usual. After several casts something hit the plug hard. This fish was staying down, making a run upriver away from my boat. I adjusted the drag on my reel and waited for the fish to tire.

I still had no idea what was at the end of my line. The fish finished its run but continued to stay deep. It just lay there, stubbornly holding its position in a very musky-like way. Time passed with no luck at moving the large fish. I didn't feel confident about horsing it closer, so in desperation I did something dumb. I reached back and pulled the starter cord on my small outboard. Throttling just enough to make some headway against the current, I started upstream toward the place where the fish held its ground. As I closed the distance it started to run again. This time it swirled close enough to the surface for me to see what "it" was. My heart pounded. The musky dived. Then it headed toward the boat. I cut the motor but it was too late. The line went slack and I learned another lesson. Don't chase fish with your boat.

Just as I lifted my rod to bring the lure off the bottom, something plowed into the jig hard! The smallmouth immediately began to dance on the surface. Three acrobatic jumps later I pulled the exhausted fish near the boat.

Things began to slow down, but I didn't care. I could feel my tan and disposition improving. I noticed two large birds in flight and I watched as one of them suddenly folded its wings and plummeted toward the water. Just before impact the osprey pealed off, apparently deciding that the fish was out of reach. This went on for a while before one of the birds hit the water, successfully snaring a fish in its talons. Ospreys are becoming more common on the river and I enjoy watching these large fish hawks.

It was now very hot and the fish were ignoring my every effort. I took a brief swim to cool off and decided to try something different. I had brought Dad's old Shakespeare glass fly rod and some popping bugs along. There are some thick weedbeds along the bank in that part of the Juniata. I spent some time casting along the weeds, stripping the line so the small yellow popper skipped along the surface. I caught a couple of "flyers" in the nine-inch class. Fly fishing for bass is fun and very effective on many occasions when nothing else works.

I wanted to make it to the Susquehanna before lunch so I could take the boat out and get some things done around the house. Plugging the shelves on the way produced a few small bass and one around a foot long. By noon I arrived at the confluence of the Juniata and Susquehanna rivers.

It was now so hot that I had real confidence problems, but I decided to try a few casts before I gave up. There are some shelves in this area that are well-known for harboring muskies and bronzebacks. I anchored the boat near a rock outcropping and searched my plug box for something appropriate. I picked a bright-yellow jig, cast toward an eddy near a large rock and let the lure sink to the bottom. Reeling rapidly, I tried to imitate a madly fleeing "something or other" to the sleepy bass. Nothing happened. I tried again. Nothing happened. Another cast. Nothing happened. One more time...*bam*!

Just as I lifted my rod to bring the lure off the bottom, something plowed into the jig hard! The smallmouth immediately began to dance on the surface. Three acrobatic jumps later I pulled the exhausted fish next to the boat. Netting the 16-inch bass gave me the unexpected thrill of catching a decent-sized smallmouth in the heat of the summer sun. It also made me feel better about the lost bass and musky earlier in the day.

On the way home my mind drifted over the morning's events. I'd seen a deer, some fish hawks, caught a big catfish and a good bass, played a musky and had a much-better-than-average day. The river always instructs, usually entertains and even its dog days are my good days. My only regret for this dog day was that I didn't share it with someone else.

Dan Martin, a native of Lewistown, avidly fishes the Juniata and Susquehanna rivers. He is a Fish Commission boating education specialist.

Conservation Officer or Policeman?

by Brian B. Burger

Conservation officers nationwide face daily complexities similar to those faced by the entire law enforcement community, including an alarmingly high assault rate.

Is today's waterways conservation officer a conservation professional with a police function or a police officer with a primary role in conservation and waterway safety? The recent installation of a red emergency strobe light on my patrol vehicle has shed some symbolic light on this contemporary issue.

Conservation officers nationwide face daily complexities similar to those faced by the entire law enforcement community, including an alarmingly high assault rate beyond many other types of law enforcement. Training in present legal issues, first aid, hazardous materials/emergency management, self-defense and investigative techniques attempts to address these issues. To some, responsible training and appropriate equipment issue speak of a police-first view toward the conservation officer role. To others, these prudent measures simply address a present mandate that all members of the law enforcement community be professionally competent in both general and specialized areas of responsibility.

So why a red light on my Fish Commission patrol vehicle? Because I am a conservation "police" officer. Because my official vehicle is deemed an emergency vehicle. Because it is expected that all law enforcement personnel be so equipped. Simply, it helps me help you!

Does this new apparatus mean that the public can expect me to approach my role differently? Well, I used the light during each of the three patrol days following the light's installation. Day 1: Stopped on road to relocate a crossing wood turtle to safe passage (turtles are protected by the Fish and Boat Code). Day 2: Stopped on notably dangerous route with hatchery truck and civilian assistants engaged in fish stocking activities. Day 3: First on the scene of a motor vehicle accident with injuries on a state highway.

As for my duties, they are unchanged. As for my ability to assist the public and protect our precious resources in a safe manner, that has been enhanced. As to the argument at hand, it's academic at best and certainly less urgent than the pending concerns on my clipboard.

Brian B. Burger is the Centre County waterways conservation officer. The Fish Commission invites comments on this topic—in agreement or disagreement.

Art Michaels

The Pennsylvania Fish Commission is

125 years old!

125 years

1866-1991

Anniversary Calendar — $5

(includes postage/handling)

To commemorate our 125th anniversary, we offer you a unique calendar plus special collectors' items.

The **1991 Anniversary Calendar** is colorful, and loaded with fishing and boating tips, useful information on seasons, interesting historical facts and photos and more.

Commemorative Fishing Plug — $6

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The **Commemorative Fishing Plug** is a replica of the wooden plugs used in the latter 1800s when the Fish Commission was formed. It's a great keepsake but could also produce that trophy fish!

Collector's Cap — $6

(includes postage/handling)

Dave Wolf

The **Collector's Cap** is the ever-popular denim ball cap with a spiffy patch for the 125th anniversary. It also has a holder for your fishing license. *Quantities are limited so don't miss out on this one.*

Help us celebrate the occasion!

To order any of these special anniversary items, send check or money order, payable to Pennsylvania Fish Commission, to:

Eleanor Mutch
Pennsylvania Fish Commission
P.O. Box 1673
Harrisburg, PA 17105-1673

Boater's Source Directory

Nearly everything a boat owner might want to know about obtaining information, particularly on boating safety, is contained in Boater's Source Directory, distributed by the BOAT/U.S. Foundation.

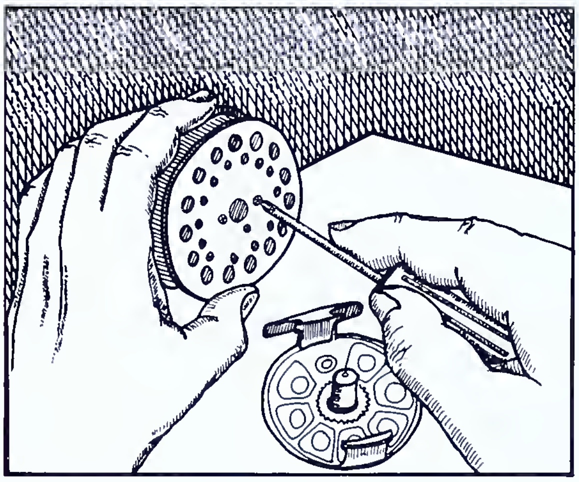
The 29-page pocket-sized booklet lists names, addresses, telephone numbers and descriptions of services and publications available for more than 100 sources throughout the U.S. and Canada. Most items are free.

Boater's Source Directory was written, designed and produced by the BOAT/U.S. Foundation for Boating Safety and funded by a grant from the U.S. Coast Guard. Grand funds are derived from federal marine fuel taxes paid by boaters and deposited into the Aquatic Resources Trust Fund established by Congress in 1984.

For complete details, contact: BOAT/U.S. Foundation, 880 South Pickett Street, Alexandria, VA 22304. The phone number is (703) 823-9550.

Angler's Notebook

by Chris Dolnack



Now is a good time to go over your rods and reels. Check the line guides and bail roller with a cotton swab. If fibers cling to the surface, replace the component. Check bail springs and replace them if the bail sticks. If service center repairs are needed, you'll likely have your tackle back in plenty of time for early season action.

Do you store your small outboard motor off your boat in the winter? Using a sawhorse is a simple, inexpensive way to store a small outboard. Sawhorse kits come complete with wood, hardware and nails, and cost about $6. Hardware stores and home centers have them.

When your tip-up flag goes up, don't set the hook on the fish's initial run. Wait until the line stops. Then take up the slack. As the line starts playing out again, strike hard.

Panfish school off submerged weed beds. To find these spots, use a sounding rig made from a treble hook secured to a braided line weighted with a sinker. Drop the weight to the bottom and jig it around. If your hook has weeds on it, you're in the right place.

Now is the time to inventory the contents of your fishing vest and tackle box. Make a list of your needs and place it in your wallet so it's handy when you run into "show specials" at one of the upcoming sport shows.

Small-boat anglers looking for a winter project might consider making a portable livewell out of a cooler. Conversion kits are available commercially, but the handyman angler can make one using garden hose, PVC, a few clamps and a bilge pump. Cooler/livewells make excellent bait boxes as well as fish keepers.

Dress for ice fishing in several thin layers rather than one or two heavy layers. Wear fewer layers while walking and drilling holes to reduce perspiration. Add layers as your body cools.

If one particular tip-up draws strikes, drill holes around it and set in additional tip-ups at the same depth. If the action gets hot, switch to an ice rod and a flashy jig such as a jigging Rapala, silver buddy or Swedish pimple.

Use a dip net to get minnows out of the bucket. Wet hands chill quickly. To prevent the dip net from blowing away or otherwise becoming lost, tie the handle to the bucket bail with a length of braided line.

Store grubs, mealworms and waxworms in empty pill bottles or 35mm film containers and keep the containers in an inner pocket. The small snap-cap containers stow and open easily.

Fly tying and rod building classes will soon be starting. Contact your local tackle shop or sportsmen's club for information on upcoming sessions.

illustration- Rose Boegli

PENNSYLVANIA FISH COMMISSION

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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On the Water

Experts

with Dave Wolf

There is little doubt that opinions often become fact once penned on a page for publication. We are all influenced by what we read in magazines and newspapers, or hear on television. "If they can write or say that, well, then it must be true," is a belief held by many. Most who communicate through the media for any length of time soon become "experts" in the public's mind. Some wear the title on their chest for the world to see. Others meekly accept the honor. Still others tell you that it just isn't true.

For the sake of brevity allow me to address the fishing "experts," those who mold minds and change opinions and directly or indirectly steer the angler to a new fishing hotspot or a product that guarantees the angler a greater degree of success, or so they claim. Most outdoor communicators are "experts" in their field to at least some degree, simply because they spend a lot of time along our lakes and streams to inform the public—that is their job. Often they write on findings from the Commission and other sources to keep the public informed, which is what we refer to as "reporting," and you need not be a fishing "expert" to do so.

Factor into all this the idea that fishing communicators must eat, and are often assigned to report on a wide variety of fishing topics. Some know very little about the topic as they begin their quest to complete the assignment, but they research the subject well, talk to experts in the field and take those glossy photos that leave most of us drooling. They do a good job and walk away with a paycheck and perhaps another assignment.

Now consider the audience—producers and editors do. Anglers want to read success stories, they want to see large fish on covers, and they want some place new to explore or perhaps a new lure or rod to try. As a result of this, the communicator cannot sell a story about a bad day fishing or a photo of some small fish that many of us catch day in and day out. So over the years, writers have spent countless hours trying to become as knowledgeable as possible about the sport of fishing, and as successful as possible. With cameras slung over their shoulders, they try and try to capture the largest fish of the year on film—something they know editors buy and readers want to see.

Those who produce television programs spend days and weeks filming and then with modern-day editing equipment reduce all the footage to a 20-minute program with commercials to fill up a half-hour. The result is that it "looks like" the expert catches large fish on every other cast, or that all fishing writers catch monstrous fish on every trip. It just ain't so, and if you ask them, they will tell you that it takes hours and hours to produce a good story and even longer to capture that coveted magazine-quality cover photo.

I blame no one because they, like me, are simply doing their jobs. They know what the public wants and they deliver, and to most of us caught up in the communicating world, everything seems just right.

However, a few months ago I received a letter from a youngster who had been quite satisfied with his fishing ability until he had seen a famous fishing personality on a national fishing program. The "expert," he told me, caught many more and much larger fish per outing than he did and he wanted my advice on what he was doing wrong.

Russ Gettig

Obviously this garnered my attention and I wrote to tell him that the program was more than likely shot over a much longer period than the program's actual airtime and that it had been edited. Some of the fishing may even have taken place on private waters where little fishing takes place and large fish abound.

But it made me pause and think that perhaps along the way I may have unintentionally misled others in their thinking and goal-setting and if I have, I wish to make amends. Most "experts" are just plain folks with a lot of time to fish and the ability to write, and they, too, go fishless, tangle lines, and make errant casts. And the large fish photos they sell may be the largest fish of the year, not the day.

Our job is to inform, entertain, report and give food for thought. But "experts" are like heroes. They exist only if you want them to.

1866-
1991

125 years

The year 1991 marks the Pennsylvania Fish Commission's 125th anniversary.

See the bottom of page 3 for more details.

Pennsylvania

ANGLER

The Keystone State's Official Fishing Magazine

March 1991/$1.50

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Straight Talk

First Benefit

On December 20, 1990, the Commission received approval from the United States Department of the Interior on Pennsylvania's application for federal assistance to implement a 10-year statewide fish culture station improvement program.

This project, entitled "Propagation Efficiency Program," is planned for completion on December 31, 2000. When it's completed, it should allow the Commission's fish culture system to retain its position as a strong national leader. Funds for this effort will now be available from the Sport Fish Restoration Act, which provides up to 75 percent of the costs for completion of this effort. This money is derived from federal excise taxes on fishing and boating equipment and federal gasoline tax revenue. The balance of the funds will be user fees provided by fishing license and trout/salmon permits purchased by Pennsylvania fishermen.

The continued health of both these funding sources is essential to allow successful completion of the hatchery reconstruction effort. Inflationary construction costs may also influence progress on this project.

The major objectives of the improvement program are (1) to upgrade old and develop new facilities at the existing 17 fish culture stations so that they meet operational and environmental needs; and (2) stabilize coldwater production and increase cool/warmwater production capabilities.

Structural alterations are required to permit hatchery discharges to continue to meet upgraded stream water quality standards and new solid waste disposal regulations. The rising costs of production in all facilities mandate upgrades to permit the most efficient use of available water supplies, production facilities and personnel. New warmwater and coolwater management plans for a variety of fishes dictate the need for more fish production flexibility and timely production of different species and sizes of fish.

Pennsylvania's fishery program, which is heavily supported by hatchery and fish culture activities, has long been highly regarded by anglers and conservationists throughout the nation. A large portion of Pennsylvania's coldwater trout and salmon program depends on support from the fish culture facilities and staff. The trout program is designed to give many additional hours of fishing recreation by supplementing natural trout production with healthy adult trout. Pennsylvania's stream classification system protects high-quality naturally producing waters and provides a variety of specially regulated trout fishery areas designed to give maximum fishing opportunities and proper protection of existing or stocked trout populations.

Today, warmwater and coolwater fishing interest in Pennsylvania is growing at an increasing rate. Although fish populations in warm/coolwater streams, rivers and lakes are self-sustaining, fishery managers frequently need fry and fingerling-size warm/coolwater forage and game species to manage these situations best. Increased fishing pressure and adverse habitat effects such as weather or manmade disturbances often cause the need for reintroduction or maintenance stocking.

Pennsylvania fishermen have long benefited from the products of the Commission's fish culture efforts, and it's important the Commission continues these services. As the new improvement program progresses, the Commission will strengthen its ability to continue to serve an ever-expanding and wider variety of angler interests.

Early renovations will mainly address trout and salmon production facilities. The Propagation Efficiency Program is visible evidence of the new trout/salmon permit revenues at work. It is an investment in the future.

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

FEB 28 1991

March 1991 Vol. 60 No. 3

Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

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The covers

The angler on this issue's cover is netting a nice rainbow trout, and the fisherman on the back cover is about to release a rainbow trout. The front cover was photographed by Doug Stamm, and the back cover picture was taken by Dick Mermon. Some anglers embrace the idea of catch and release. Others reject it. After reading the article on page 31, where do you stand? If trout and trout fishing interest you, please see pages 12, 16 and 22. Bass anglers will definitely want to check out page 14, and the tips in the article on page 26 can help any angler. This issue's Commission 125th anniversary article on page 4 features a unique Commission chronology with a wealth of fascinating facts.

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DOCUMENTS SECTION

A CHRONOLOGY OF THE PENNSYLVANIA FISH COMMISSION

1866-
1991
125 years

1866 A convention held in Harrisburg to investigate pollution, bad conditions existing in mountain lakes and streams, and the stopping of spring shad runs by dams resulted in Governor Andrew G. Curtin signing the law that named James J. Worall Pennsylvania's first Commissioner of Fisheries.
1867 The first fishway constructed at the Columbia Dam on the Susquehanna River.
1868 Legislature passed a law prohibiting the use of seines for taking fish within 200 yards of any device erected for the passage of fish.
1870 Thad Norris, a private citizen, purchased 450 bass taken from the Potomac River at Harpers Ferry and released them in the Delaware River on October 26, just below the Lehigh River Dam at Easton. Residents along the Susquehanna and Schuylkill rivers later did the same thing.
1873 An act, signed into law April 29, 1873, established a Fish Commission of three persons.
The Marietta Hatchery, Pennsylvania's first, was established on Hoover's Spring—one of the famous Donegal Springs. John P. Creveling, first superintendent.
Some 2.7 million young shad hatched and planted in the Susquehanna River.
About 2,044 bass taken from the Delaware River and stocked in other waters of the Commonwealth.
1875 Legislature appropriated $2,000 to purchase nine acres in Corry and $3,000 for its immediate improvement to construct the "Western Hatchery."
1876 Calico bass planted in the Susquehanna River near Harrisburg.
1878 Act of June 3, 1978, forbade fishing on Sunday.
1879 United States Fish Commission distributed 12,000 carp to individuals in 25 states, including Pennsylvania.
Pennsylvania Fish Commission enlarged by three additional members.
1883 The "Eastern Station" built on leased property (Troxell) on the Little Lehigh River.
1884 The "Rogers" fish ladder was erected at the Columbia Dam on the Susquehanna River.
1885 A $5,000 legislative appropriation established a hatchery in Erie that began operating on December 12.
1886 First brown trout eggs—10,000, received from Germany—hatched at the Corry Hatchery.
1888 First recorded planting of rainbow trout in the Susquehanna River.
1893 Legislative appropriation enabled the establishing of the shad propagation station at Bristol.
1895 Fish Commission abandoned the cultivation of German carp and attempted to raise black bass.
1897 Commission purchased railroad car to transport fish.
1901 Legislature passed a bill designating certain species of fish in either of two classes: game or food.
1903 Bellefonte Hatchery opened on October 9. J. P. Creveling named superintendent.
Citizens of Bellefonte raised $3,500 for hatchery land and railroad siding to the grounds. Property turned over to the department on August 9.
October 16: Deeds turned over to the department for the Pleasant Mount Hatchery grounds.
Pennsylvania pioneered the propagation of frogs.
1904 About 90,900 frogs distributed.
More than 10.2 million chain pickerel propagated—a first—pickerel had never before been propagated in any fish cultural establishment in the United States.
Yellow perch propagation began.
1905 Citizens of Crawford County made a gift to the Commission of the Crawford Hatchery, located about a mile from Conneaut Lake. Union City Hatchery completed November 27.
1906 Spruce Creek Hatchery, Huntingdon County, started in June.
Smelt hatched at Torresdale Hatchery planted in Bigelow Lake.
1907 The *Commodore Perry*, a 70-foot stream tug built for the department's use on Lake Erie.
Experiments began on the artificial propagation of freshwater pearl mussels.
Some 80,000 coho fingerlings planted in the Lackawaxen and Equinunk. Two were taken by hook and line in the Lackawaxen in July.
1909 Law passed forbidding the emptying into any waters of the Commonwealth any waste deleterious to fish.
1910 Holtwood Dam built on the Susquehanna River by Pennsylvania Water & Power Co., forming Lake Aldred.
1911 September 1: Crawford Hatchery abandoned.
1912 About 500,000 "muscallonge" eggs hatched at Union City...first to be planted in the waters of the state.

1913 Spruce Creek Hatchery sold.

Commodore Perry was a valuable aid in raising Perry's flagship, the Niagara, from Misery Bay.

First effort to control motorboating by law. Act 292 signed by Governor John K. Tenner, requiring motorboats (except steamboats) to have an efficient muffler.

1914 New hatchery erected on Erie filter plant grounds.

1915 Fish wardens and deputy fish wardens given power to make arrests by act of April 21, 1915.

1917 Electric lights first installed on Commission hatcheries.

New motor truck purchased for the Erie Hatchery.

1919 Act of July 8 (effective that date) required that nonresidents buy a $5 fishing license. Only 50 were sold that year.

1921 Act of May 16, 1921, P.L. 559, known as the "Resident Fish License Law," was passed.

1922 First resident fishing licenses established. Cost: $1. For the first time the Commission became self-supporting; a total of $207,425.53 was the first year's income from licenses sold to all citizens over 21 years of age.

1923 Legislature reduced fishing license age limit to 18. The first license button issued January 1, 1923.

1924 Stream survey started to classify waters with regard to area, depth, fish species, aquatic life and general conditions.

1925 A site was purchased in Bedford County to be known as the Reynoldsdale Hatchery.

Creel limits were: trout—25; bass—10; walleye—10; pickerel—15; and "muscallonge"—3.

During 1924 to 1926 the fishing license age limit was reduced to 16 years of age.

1926 Nonresident fishing license fees were made reciprocal but in no instance less than $2.50.

1927 New license button made with a device on the back for carrying the license, together with an approved pin.

1928 August 1: Lake Wallenpaupack opened to public fishing.

Bureau of Research established.

Commission stocked the lake created by the Conowingo Dam.

Resident fishing license fee increased to $1.50.

1929 Tionesta Hatchery completed.

1930 Most severe drought ever experienced during summer. Many tributary streams dried entirely.

1931 Commission stopped sending out fish on application; all fish now stocked by Commission personnel.

December: First issue of *Pennsylvania Angler* published—subscription price: 50 cents per year.

Act of May 28, effective July 1, required a license for motorboats operated on inland waters. Enforcement of law placed with Fish Commission.

1932 Safe Harbor Water Power Corporation created Lake Clarke with the Safe Harbor Dam.

September: land purchased for Huntsdale Hatchery.

For the first time, Commission distributed more than one million legal-sized trout.

First regulations published by the Board of Fish Commissioners for motorboat operation.

1933 Creel limit of trout reduced to 20.

Act 275 amended Act 121 to specify procedures and language for license application, establishing outside issuing agents and special licenses for dealers.

1934 "Fisherman's Paradise" created. The number of visitors in the first year totaled 2,952.

Regulation established the basic boating "100-foot rule."

1935 First tourist license (three days—fee $1.50) became available for nonresidents. Same bill also provided a 12-year age limit for nonresidents.

1936 Flood waters washed away a great number of trout and destroyed many rearing pools. Fishermen still able to enjoy fairly successful trout and bass fishing.

1937 House bill no. 6 made Sunday fishing lawful.

Pymatuning Lake opened to public fishing July 1.

1938 Commission produced its own brown and rainbow trout eggs for the first time in history.

1939 Senate bill 160, effective September 1, permitted the purchase of land and waters by the Fish Commission.

1940 Yellow perch raised to fingerling size for the first time.

Law prohibiting the sale of fish bait or bait fish taken from inland waters became effective October 1.

1941 Pennsylvania regulation prohibited trolling from a motorboat.

1942 Blue pike catch in Lake Erie up 400 percent over 1941.

Regulation added that prohibited the operation of a motorboat while intoxicated.

1943 Act No. 145 provided free fishing licenses for servicemen.

1944 Commission purchased Trexler Fish Hatchery in Allentown.

Trolling regulation amended to permit trolling from motorboats on all Commonwealth rivers.

1945 Legal size of muskellunge increased from 22 to 24 inches.

1946 Fisheries management program began with mobile biological laboratory.

1947 Act 81 provided free fishing licenses for certain disabled veterans.

Stream management program started.

Pennsylvania boating regulations rewritten to conform with the Federal Motorboat Act of 1940.

1950 Fisherman's Paradise set new record attendance for one year: 34,796.

1951 Fish were placed in the Schuylkill River for the first time in a decade after a cleanup campaign by the Department of Forest and Waters.

Act No. 68 directed the Fish Commission to make a study of the migratory habits of fish, particularly shad.

Legal size of pickerel increased from 12 inches to 15 inches.

Commission acquired Benner Spring Research Station property.

1952 Size limit removed on crappies.

1953 Virgin Run Lake formally dedicated July 11. First federal aid project of the Commission under the Dingell-Johnson Act and the first lake built from start to finish by the Commission.

Pymatuning Lake first stocked with muskellunge.

Act 54 established a 10-horsepower limit on Lake Canadohta, Crawford County.

1954 Fishing license fee increased from $2 to $2.50.

Size and creel limits removed on panfish and food fishes.

1955 Ground broken for construction of Lake Somerset on August 17.

Act 205 established a 7 1/2-horsepower limit on Quaker Lake, Susquehanna County.

1956 Taking carp with long bow and arrow legalized.
Commission established uniform fly-fishing-only regulations for all projects.
Pellet feeding of trout initiated at hatcheries.
1957 Trout season extended to October 31 in selected lakes.
Act 330 increased fishing licenses to $3.25 with $1 now earmarked for acquisition and development.
Act 155 gave Commission right to accept donations.
Act 121 gave wardens right to arrest persons for littering.
Benner Spring Research Station began full operation.
Rules of the road regulation amended to prohibit water skiing within the provisions of the 100-foot rule.
1958 First fish-for-fun area established on Left Branch of Young Woman's Creek in Clinton County.
Bell and Holmes hired to make Susquehanna Fishway Study.
Kokanee salmon eggs procured from Montana, hatched at Pleasant Mount and stocked experimentally as fry and fingerling in eight lakes.
1959 Patrol boat *Perca* launched at Lake Erie.
Act No. 673 signed by Governor David L. Lawrence on December 15, 1959—Eliminated the license button, and permitted aliens to purchase a nonresident license.
Made nonresident fishing license fee a flat $7.50 (formerly it was reciprocal).
First "wired stocking area" installed on South Branch of Kinzua Creek, McKean County.
1960 Aliens permitted to purchase a fishing license for $7.50.
1961 More than 116,280 fish were killed in the Susquehanna River during October. Commission accepted a $45,000 voluntary contribution from the Glen Alden Mining Corporation—the largest settlement to date ever to be made in the United States for fish killed by pollution.
Largest shad migration of modern times recorded in the Delaware River.
Belmont Lake, in Wayne County, opened June 17.
Act No. 474 eliminated the metal motorboat license tags.
1962 Federal-state cooperative trout-stocking program became effective.
Fisherman's Paradise opened April 14 on a "fish-for-fun" basis.
1963 Last year that nonresident trout stamps were required.
Pymatuning Compact amended, raising the horsepower limit to 10 and removing the prohibition on motorboat operation by persons under 16.
Act 111 established a six-horsepower limit on Sugar Lake, Crawford County.
1964 Act 400 approved the numbering system for boats—effective February 1.
Resident fishing license fee increased to $5.
1966 100th anniversary of the Commission observed.
25,000 coho salmon stocked in Harvey's Lake, August 10.
1967 Albino brook trout stocked for the first time.
Palomino trout stocked for the first time.
Act 227 signed into law, requiring the display of a capacity plate on most boats.
1968 Oswayo Hatchery, in Potter County, purchased.
First fall run of coho "jack" salmon, from fingerlings planted in the spring, return to Erie's tributary streams.
1969 Senate bill 10—Liquid Fuels Tax bill signed by Governor Shafer.
Commission received Amur pike eggs from Soviet Union.
1970 Brook trout named official state fish, March 9, 1970, Act 61.
Construction began on Big Spring Hatchery, Cumberland County.
1971 Chinook salmon smolts released in Lake Erie.
1972 Commission names 75 streams in "Wilderness Trout Program."
During Hurricane Agnes, Fish Commission personnel, using patrol boats, aided stricken residents throughout the Commonwealth and received special citations from Governor Milton J. Shapp.
1973 Resident fishing license fee increased to $7.50.
1974 Bog turtle protected by HB 1248.
New littering law signed by Governor Shapp on March 22.
Use of electric motors authorized on all Commission lakes.
HB 2538 gave Commission jurisdiction over reptiles, amphibians and aquatic organisms.
1975 First strike by Commonwealth employees.
Record number of miles of trout waters stocked: 5,042.8.
Trout season extended (to October 31) on "all approved trout waters" for the first time.
1976 Commission began trout stream inventory.
World record Amur pike (caught by hook and line) taken from Glendale Lake, Cambria County.
Commission adopted new regulations for organized snake hunts.
1979 Fishing license fees increased—$9 resident; $14 nonresident; $9 seven-day tourist; $10 lifetime (residents 65 years and older).
Dedication of fish ladder on Fairmount Dam, Schuylkill River, Philadelphia.
1980 Act 175 codifies fishing and boating laws.
Police powers given to Commission's waterways conservation officers.
First striped bass tournament held at Raystown Lake in Huntingdon County.
1981 Commission adopts Operation FUTURE.
Landlocked salmon stocked in Harvey's Lake, Luzerne County.
1983 Fishing license fees increased—$12 resident; $20 nonresident; $15 seven-day tourist.
1984 American shad given gamefish status by Fish Commission. Creel limit set at six per day.
First female waterways conservation officer hired.
First Fish-for-Free Day in Pennsylvania (September 8).
Boating Under the Influence (BUI) becomes law.
First issue of *Boat Pennsylvania* published.
1985 Commission's Cooperative Nursery Program lists 188 fish culture facilities.
1986 A 33-inch minimum size limit established for striped bass in the Delaware River.
1987 Commission holds first "Day on a River" at Fort Hunter Park in Dauphin County.

Commission "fish wardens" (photo next page top left) during training in June 1968 at the Commission's Stackhouse School before the facility was remodeled and renovated. Boat launching (at right) at a Fish Commission access in April 1962.

file

PFC file

The boating anglers at left are landing a nice bass in August 1961. An act of May 28, 1931, required a license to operate a motorboat on Pennsylvania inland waters, and enforcement of this law was placed with the Fish Commission. In 1964, Act 400 approved the boat registration system.

file

Bill Hartle

An enormous crowd watches a Fish Commission ice fishing clinic (above) at Shenango Lake in February 1971.

Perch Fishing Means Spring is Here!

by Chris Dolnack

Joel Arrington

To many Pennsylvania anglers, April is the month of the trout. Tackle shops and lunch counters across the state buzz with talk about stockings and stringers of brooks, browns and rainbows. But for fishermen who can't wait until the trout opener to wet a line, yellow perch fishing is a rite of spring.

Even though perch are not noted for their fighting ability, they are plentiful across the state. Their firm, white flesh is also tasty.

Shortly after ice-out, as many as 25 males follow one mature female into shallow water for the spawning run. Spawning usually occurs at night or early in the morning when the water temperature reaches 45 to 50 degrees. The eggs are deposited over rooted vegetation, submerged brush or other obstacles to which the eggs can adhere. After fertilization, the fry hatch in about three weeks.

It usually takes three years for a perch to reach five to eight inches. Fisheries managers consider perch to be good forage fish for walleye, pike and muskellunge. But if the predator fish population is low, perch can overpopulate a waterway and become stunted, providing poor fishing.

Perch eat crayfish, snails and small fish, including young perch. Small jigs and minnows are top perch baits. Small

> ***Even though perch are not noted for their fighting ability, they are plentiful in Pennsylvania. In addition, their flesh is tasty.***

nightcrawlers and worms are also good baits. Small, lively minnows catch perch when nothing else will. But artificials have the edge when you locate a school of hungry perch because the jig can be put back into the strike zone much quicker.

Most anglers use lures that are too large to interest perch. Panfish, and especially perch, can pick up and discard a lure without a fisherman ever knowing it. This was proven to me when I lived in the Iowa Great Lakes region. This area in the northwestern corner of Iowa features several large, springfed lakes. The water is clear and my fishing companions and I were able to observe numerous species of fish through our ice holes. On more than one occasion, I saw perch of various sizes inhale my microjig by flaring their gill plates. The fish promptly exhaled the jig. All the while, I could perceive no sensation of a strike with a graphite rod and two-pound-test line.

I now apply this lesson to open-water perch fishing here at home. Start with jigs of 1/16-ounce and smaller. Curly-tailed grubs and shad darts are excellent perch lures. Cast the jig and let it settle to the bottom. Then reel in the slack. With the rod tip low, make four short jerks with the rod tip, and then let the jig settle while you take up the slack. Repeat the process. The retrieve helps hook the perch. If fish are there but strikes are spotty, try tipping the jig with a grub or mealworm.

Moving-water perch

Most anglers think of perch primarily as a lake fish, but perch can also be found in slow-moving rivers and streams. The spillways and streams below dams are often overlooked by many fishermen. Even the smallest discharge can yield surprising numbers of perch.

Tulpehocken Creek below Blue Marsh Lake in Berks County and the Brandywine Creek below Struble Lake in Chester County are just two examples of streams that hold pockets of yellow perch in the spring.

Keystone State native

A native of Keystone State waters, the yellow perch gets its name from the Latin words *perca*, meaning dusky, and *flavesceus*, meaning yellowish. An olive back blending into golden-yellow sides with six to eight dark vertical bands distinguish the perch from other fish.

Unlike its larger cousins the walleye and sauger, perch lack canine teeth. They are a schooling fish for a majority of the year and prefer water temperatures from 60 to 70.

Tackle

A 5 1/2- to six-foot light- to ultralight-action spinning rod and matching reel spooled with four- or six-pound-test line is ideal for perch fishing. If you'll be fishing more than one rod, consider using high-visibility line to help you detect strikes. In

George Dolhack

Yellow Perch Particulars

• **Natural Range:** Hudson Bay region east to Nova Scotia, south along the Atlantic Coast to South Carolina, and westward through the Great Lakes to the northern part of the Mississippi River drainage.

• **Food preferences:** Young perch eat zooplankton and insect larvae. Eventually they begin to eat crayfish, snails and small fish, including their own kind.

• **Growth:** Perch growth depends on the population's size, habitat and productivity of the water. It usually takes three years for a perch to reach five to eight inches. A 10.6-inch perch weighs about a half-pound. A 12.1-inch perch weighs about three-quarters of a pound. A 13.3-incher goes about one pound. A 16.8-incher is about a two-pounder.

• **Current state record:** A 2-pound, 3.5-ounce brute that was 14 inches long. Caught by Ivan Grek, of Erie, in Presque Isle Bay in 1986.

George Dolhack

clear water you may want to tie your main line to a small barrel swivel and use two- or four-pound test.

Keep one rod rigged with two or even three jigs in a dropper rig for times when perch fishing from a boat gets hot and heavy. Using small shad darts in a dropper system it is not uncommon to bring up two perch at a time. Tie the heaviest jig onto the bottom of the rig and use lighter jig heads as you move up toward the rod tip.

If the perch have not yet moved into the shallows, fishing minnows on a slip-bobber rig is very effective. Slip-bobbers have long been the ace in the hole for walleye guides in Minnesota and Wisconsin. But as many anglers have discovered, this rig is also deadly on perch. The key to the system is to tie an overhand knot in the line at the approximate depth you want to present the bait. If fish are holding in 12 feet of water, then simply tie the knot about 12 feet from the business end of the line.

Thread a small slip-bobber onto the line and tie the hook to the end of the line. A small splitshot can be pinched onto the line about eight inches above the hook. When you reel the line in to cast, the bobber slides down to the splitshot. Once the bobber hits the water, the line pays out until the knot stops the minnow at the desired depth.

Locating perch

Locating schools of perch isn't always easy, but once you find them, the action can be fast and furious. On large waterways, flotillas of small boats give away the location of the school. If no schools have been located, you'll have to do some searching. This is where having a quality fishing sonar and knowing how to use it pay big dividends. Liquid crystal graphs, or LCGs, are the easiest to learn to use. In the early days of LCG technology, a school of small fish might be identified as such. But then again, it might have showed several large fish, instead. With today's high resolution units offering target separation as little as one inch, you can identify even small schools of perch.

If you don't yet have a fishing sonar unit, or if you lack confidence in your ability to use it, there's still a time-tested method for locating schools of perch. Anyone who has been on a fishing trip to Canada knows about the Northwoods guide's propensity for trolling spinner rigs. And if you've trolled with these guides, you know that trolling spinner rigs works.

One of my favorite spinner rigs for spring perch is a miniature hand-tied system made by Bait Rigs Tackle. I've found that perch prefer the same "hot" color combinations as do their larger cousin, the walleye. A piece of nightcrawler trolled behind a chartreuse or orange blade is as good a perch finder as there is. Once the school is located, drop a couple of marker buoys and work the area over with slip-bobber rigs or small jigs.

Another proven perch lure is the small Beetle Spin. It can be trolled, cast or worked in the same manner as a jig. The bright metal spinner blade/soft plastic trailer is a good "bird dog" bait for finding roving schools of perch.

My brother Pete and I often caught our family's supper from Marsh Creek Lake, fishing a submerged roadbed in five to eight feet of water. We'd arrive at the lake shortly after dawn and fish pieces of nightcrawler threaded on a size 6 or 8 hook with a 1/8-ounce slip-sinker rig.

This rig has also accounted for several stringers of jumbo perch from Lake Marburg in York County, where shore fishermen do well by concentrating on the rip-rap and gravel points. Perhaps the fact that shore-bound anglers do as well as their boat-angling counterparts is one reason why yellow perch fishing has become a rite of spring.

Yellow Perch Hotspots

Southwest Region

High Point Lake in Somerset County has gained a reputation for harboring jumbo yellow perch. This 342-acre lake is located near Meyersdale.

Southcentral Region

Lake Marburg is one of the best perch lakes in the eastern United States. Many anglers concentrate on the rip-rap on this 1,275-acre waterway, located near Hanover in York County. There is a 10-horsepower limit on Lake Marburg.

Southeast Region

Marsh Creek Lake, located off Route 100 in Chester County, is the centerpiece of Marsh Creek State Park. This 535-acre lake offers excellent perch fishing along its generous shoreline. Electric motors only.

Lake Ontelaunee in Berks County is the city of Reading water supply. Consequently, the 1,080-acre reservoir is open only to shore fishing. Anglers willing to walk are rewarded.

Northwest Region

Presque Isle Bay on Lake Erie is approximately four miles square with 3,840 surface acres. Misery Bay is one of the more popular perch holes.

Eton Reservoir, a 248-acre impoundment located near the New York state line, offers good perch fishing after ice-out. Electric motors only.

Northcentral Region

Allegheny Reservoir is a 12,000-acre Corps of Engineers impoundment east of Warren in McKean County. The Kinzua Arm is one of the more popular areas for perch fishing. Unlimited horsepower.

Hills Creek Lake in Tioga County is a 137-acre impoundment between Mansfield and Wellsboro. Electric motors are allowed.

Northeast Region

Harvey's Lake in Luzerne County is a 658-acre natural lake known for its yellow perch. There is no horsepower limit.

Beltzville Lake, near the town of Jim Thorpe in Carbon County, is a 947-acre Corps of Engineers impoundment. Unlimited horsepower.

Duck Harbor Pond is a deep 228-acre lake located north of Honesdale in Wayne County. Unlimited horsepower.—*CD*

A Fresh Look at the Adams

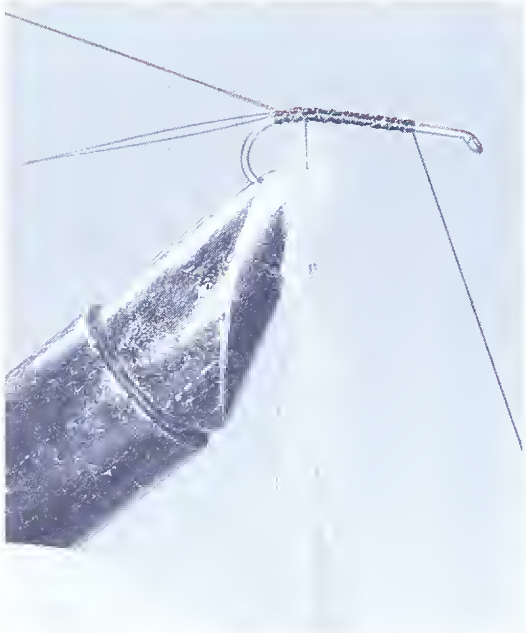
by Chauncy K. Lively

photos by the author

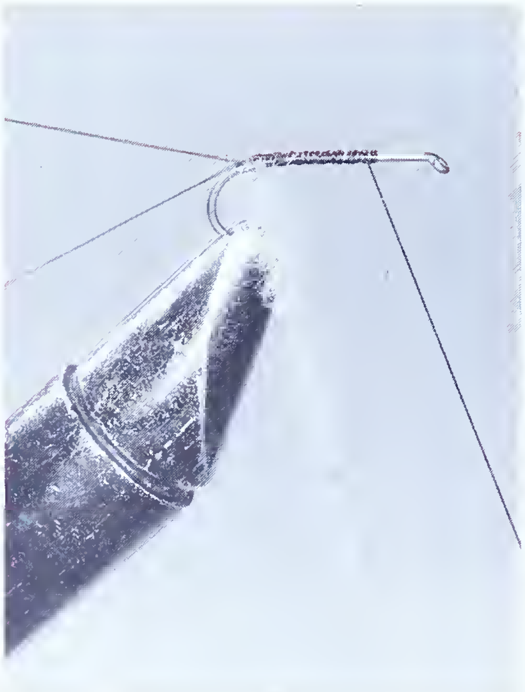
When we speak of classic dry flies, we tend to focus on those of British origin—the likes of the Royal Coachman, Coachman, March Brown and Black Gnat, to name a few. These flies played a part in the early history of fly fishing, and when the dry fly crossed the Atlantic and made entry onto the streams of New York state's Catskills, they became the backbone of the American fly fisher's kit. However, it soon became evident that it was too much to expect English flies, dressed to represent the entomology of the British Isles, to be consistently successful in matching the insects of our trout streams.

This deficiency was accentuated after the brown trout was introduced in the U.S. Anglers found that the brown was much choosier than our native brookie.

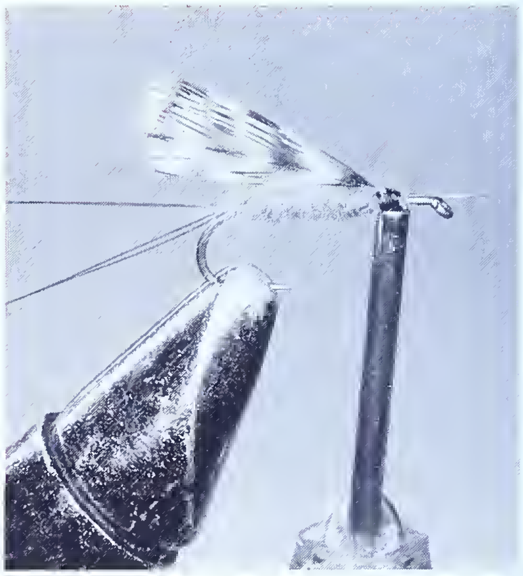
Theodore Gordon was one of the pioneer American fly tiers who urged fellow anglers to create new patterns based on our own stream insects. He led the way with his Quill Gordon, representing one of the grayish mayflies of early spring in the East. Other tiers followed with such new patterns as the Hendrickson and Cahill, representing *Ephemerella* and *Stenonema* mayflies. Most of the new patterns followed a basic format now known as the "Catskill style," featuring tails of hackle fibers, a thinly dubbed fur body, divided wings of rolled



1 Affix a dry fly hook (size 10 to 18) in the vise and tie in black 6/0 prewaxed thread at the bend. Wax about three inches of the thread next to the hook and apply a loose dubbing of muskrat fur. Form a dubbing loop and wind the free end of the thread to a point behind the eye, allowing space for the wings, hackle and head.



2 Attach hackle pliers to the bottom of the loop and spin, twisting the fur tightly. Hold the bottom of the loop to prevent untwisting.



3 Wind the dubbing forward and tie it off behind the eye. Trim the excess. For wings, select two matching grizzly hackles and cut off the tips square. With scissors, trim the ends round. Measure the wings for an effective length equal to the overall hook length and strip off the lower excess fibers. Tie in the wings by their stems, downwing-style, with the glossy sides inside.

wood duck flank feathers and sparse hackling.

In the early days of the American dry fly, there were relatively few fly tiers and the proliferation of new patterns was slow. New patterns were often dressed to meet regional needs and remained relatively unknown away from their original areas. However, as transportation improved, anglers began to travel greater distances to their fishing. And when they returned home they brought with them successful local patterns. Many of these flies were found equally effective on home waters, and soon the word spread to other areas. Thus were reputations established.

In 1922, Michigan fly tier Leonard Halladay tied a dry fly that was to become the most popular pattern in America. It was first dressed for Charles Adams, an attorney from Ohio, who used it with such great success on the Boardman River that the fly was given the name "Adams."

The Adams was not intended to represent a specific insect. It possesses a quality that anglers refer to as "bugginess," rendering it an almost universal appeal to trout. The original Adams had hackle fiber tails, muskrat fur body, spent wings of grizzly hackle tips and mixed brown and grizzly hackles.

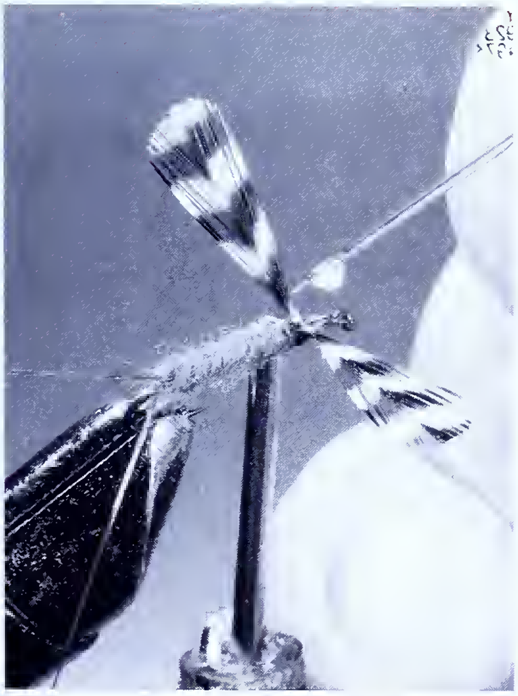
My own introduction to the Adams was on the Right Branch of Young Woman's Creek over 40 years ago. It was June and the beautiful stream was in perfect conditions. Mayflies and caddis flies sporadically lifted from the surface and the quiet rings of rising trout were visible as far as the eye could see. I fished a size 14 Adams, and when the afternoon ended I had caught and released 15 or 16 trout. This was heady stuff to a neophyte angler who considered any day a success when he wasn't skunked!

As with many popular fly patterns, there have been several variations on the original Adams theme by tiers who sought to adapt it to specific use—that is, to represent a particular insect. Examples are the Yellow-Bodied Adams and the Adams Quill. For my own use, I modify the original dressing slightly—not to come up with an "Improved Adams," but instead to use some superior new materials and techniques that were not available when Len Halladay was actively tying flies. It is possible that Mr. Halladay would have made similar modifications if he were tying today.

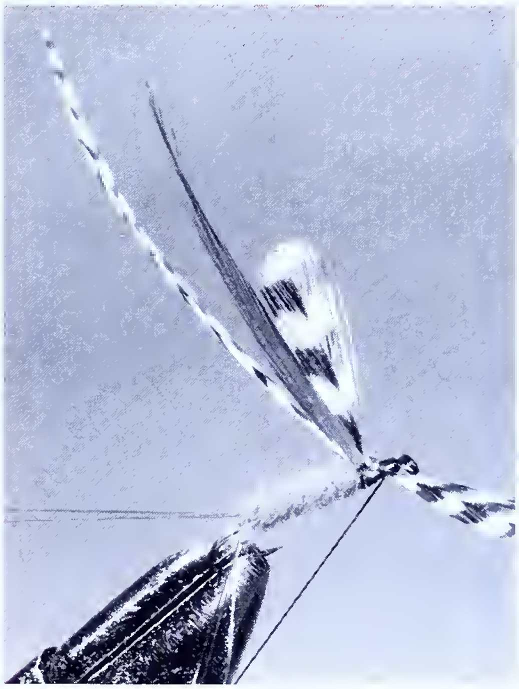
Instead of hackle fibers for tails, I use Microfibbetts, the synthetic fibers adapted to fly tying by John Betts. These fibers are tough and resilient. I think they are the finest tailing material available for all but the largest dry flies. For the Adams I tie in four fibers together and separate them into two pairs. Then I wind between the pairs with X-winds to angle them away from each other in a wide "V" configuration. Dressed in this fashion, the tails give the fly great stability on the water.

As wings, hackle tips look fine as long as they are dry. But when wet, they tend to become narrow slivers. This is particularly true of genetic hackles, which are normally narrow to begin with. I use medium-size hackles from a non-genetic cape and cut off the tips square. Then I round off the cut ends with scissors and the result is a broader outline, in keeping with the full wings of mayflies. Depending on how they are set, the wings may be full-spent, half-spent or upright. I like to keep an assortment of the three styles on hand because they are all useful at times.

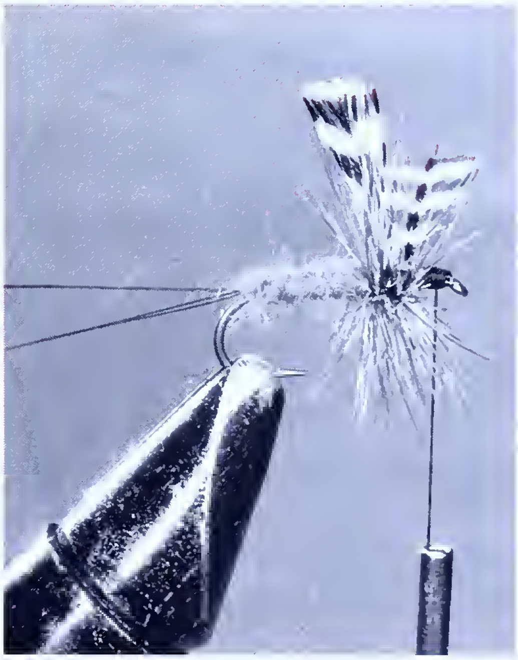
The Adams is effective in a broad range of sizes. There are many anglers in Pennsylvania who use it in size 18 for the early-season Grannom caddis hatch. A few years ago I fished a Michigan river with a friend who used a size 10 Adams during a *Siphlonurus* hatch and caught as many trout as the rest of us who were using specific *Siphlonurus* patterns. It's that kind of versatility that earned the fly its popularity. It's a true American classic.



4 *Pull the wings up to vertical position. Then separate them and press them downward to a spent position. Make several criss-cross winds at the base of the wings and apply a drop of hard-drying cement.*



5 *Select one each brown and grizzly hackle with barbules as long as 1½ times the hook gap width. Strip off the webby lower barbules and tie in the hackles together behind the wings, on edge and with the glossy sides facing the bend.*



6 *Wind the rear hackle all but one turn behind the wings. Then make the last turn in front. Tie it off. Wind the other hackle through the first and tie it off in front of the first hackle. Trim off the excess hackle tips. Finish the head with a whip-finish and a drop of lacquer on the windings.*

Choosing the Color of Bass Lures

by Andy Cline

With the advent of lure color selection devices and methods, and the introduction of yearly color fads like "pumpkinseed" and "bubblegum," choosing lure color is bewildering at best and expensive at worst.

Foregoing a fad could mean missing out on a good thing. Trying to cover all the color bases could mean going broke.

This is not the problem it appears to be. Look back a few years—a few decades—and you'll see that anglers have been catching bass consistently without fancy gadgets or unusual colors. In fact, the list of colors an angler should always have represented in his tackle box is surprisingly short. And the list doesn't include anything with a catchy name.

The list is short for three reasons: There are certain colors that cause certain reactions in bass; there are certain colors that represent prey; and there are certain colors that bass can easily see in many light and water conditions.

Other colors are either useful in a few specialized situations or are designed more to catch an angler's eye than catch fish.

Here are the no-nonsense basics on selecting the colors of bass lures. Use these ideas when you stock your tackle box.

Silver

If there is one color that can be called a universal bass-catcher it is silver.

Silver is everywhere. It imitates baitfish. You'll find it on crankbaits, spinnerbaits, spoons and jigs, and you'll even find it on plastic lures through the use of glittering flakes.

Next time you have the chance to look at a shad or other baitfish, you'll see why silver is a bass-catcher. Shad are silver. Their silver sides flash in the water even under the dimmest light. Silvery lures emit similar flashes.

> ***Despite popular belief, the night sky isn't black. It's gray. Hold something black up to the night sky and you'll see that it's silhouetted against gray. This is what bass see. Because bass tend to feed upward, a black lure fished on or near the surface on a summer evening is begging for trouble.***

Beyond silver, how do you choose?

Some experts believe color plays a small role in attracting strikes from bass. Others swear if you're not using the right color, you can't catch fish. The truth is somewhere in the middle.

Although bass do see a wide range of color, they are also nearsighted. The last thing a bass does before he hits a lure is notice the color. Vibration and movement trigger the strike.

Color is low on the list—with smell—of reasons why a bass takes a lure in its mouth. But can color be a factor? Are there colors that make bass react in certain ways?

Red and yellow

Yes. In the lexicon of a college professor, such colors are known as "biological releasers of behavior." For bass, these colors include red and yellow.

Red imitates fish gills and the fins of many species during the reproductive cycle. Red triggers feeding. Tipping a lures with red may draw more strikes.

Yellow, on the other hand, is a "negative" color. Bass don't like it. If you put it in front of them long enough, bass will hit yellow with aggression. However, the trouble with yellow is that bass are slow to hit it.

Blue is an effective color for clear water and cold water, and bass can easily see it in low light.

Chartreuse is the choice for muddy water. It is coldly bright and easily seen even by humans.

On bluebird days when the sky is bright and the sun intense, red, blue and silver are productive choices.

For overcast days, try green and chartreuse.

For the angler to be truly ready for all conditions, he must add white and black to this short list of necessary colors.

White imitates prey in much the same way as silver. It is a proven bass-catcher over a wide range of light and water conditions. While you're looking at that shad I mentioned earlier, take a close look at its belly and its back. You'll see white and black.

Bass, like humans, lose their color vision at night (although you can see color at night under lights, when no artificial light is present human vision at night is black and white). Although it seems odd, the best color for night fishing is black.

Despite popular belief, the night sky isn't black. It's gray. Hold something black up to the night sky and you'll see this. It will be silhouetted against gray. This is what the bass sees. And because bass tend to feed upward, a black lure fished on or near the surface on a summer evening is begging for trouble.

We've narrowed our choices from...how many to just seven. Does this mean fancy color gadgets or fad colors are of little use? No. It simply means you can catch fish with the basics.

For the average weekend angler, the choice is now neither so bewildering nor so expensive. But then, that's the way it's always been.

THE WATER QUALITY UNIT

by Bill Porter

photos by Russ Gettig

Ever wonder about the tender loving care given to the Commonwealth's fish? From the fertilized egg to stocking size and beyond, the Fish Commission is constantly monitoring the health and welfare of the game and non-game species.

Fish culturists handle the egg-taking and other spawning chores. They also feed, weigh, count and stock the fish. Law enforcement officers protect them once stocking is done, ensuring that anglers follow a moral and legal code in their fishing. Education & Information writes about fish and fishing, and provides instructional services to the public. And the list of Commission support services goes on. The point seems to be made. Well, not quite.

The Water Quality Unit, Division of Research, has the task of monitoring the water used by the fish and in turn by humans. These waters include nurseries, streams, lakes, and domestic water systems in Fish Commission installations, and much more.

The Water Quality Unit staff includes Dave Truesdale, senior man, and Earl Myers. The team works with other divisions within the Commission and with liaison personnel from the Department of Environmental Resources (DER).

Vince Mudrak, Division of Research chief, says, "These fellows are college graduates proficient in water chemistry, and they are responsible for maintaining water quality in the state, regardless of who or what uses it. Our work provides better fishing and safer water quality."

"I've been with the Commission since September 1974, with a four-year stint at the Big Spring Fish Culture Station in Cumberland County," says Truesdale. Transferred to Benner Spring in 1978, he has been at that facility ever since. "My training includes a degree in biology from Penn State (1972), and I was sent

Earl Myers (above) uses a spectrophotometer. This equipment measures light absorbance to identify the concentrations of various chemicals and compounds in water samples. Dave Truesdale (right) tests drinking water samples. Truesdale and Myers (right) determine a trout raceway's dissolved oxygen level.

to a wastewater training school in Missouri. Other than that, it has been training on the job." His job title is fisheries biologist.

Earl Myers began his career with the Fish Commission in 1983 at the Oswayo Fish Culture Station. "I was transferred to Benner Spring in 1984 and have been here ever since. My degree is also from Penn State (1983) in environmental resource management and I am continuing on-the-job training," says Myers. His job title is fisheries technician.

In simplified form, Truesdale has the responsibility to manage the laboratory units and Myers primarily tests water. "There's a good bit of overlap in our work," says Truesdale.

Both men agree that the lab work is involved and exacting, which may take on some routine aspects, based on their training and repeating of tests. Paperwork and permits, coupled with reports, are also the responsibility of the Water Quality Unit. "They can be as complex and demanding as our most involved water-testing procedures," says Truesdale.

Issuing a permit of any kind involves water-testing. The problems occur with the great variety of permits and the variances within each category. "For instance, we coordinate permits for each of the Commission's 17 hatcheries," says Myers. "These permits must meet National Pollutant Discharge Elimination Systems (NPDES) standards. No two of our stations have exactly the same water and discharge components."

"At the same time, we have to contact the fish hatchery managers for the kind of samples they need to take and other field work instructions based on the information provided on their permits," says Truesdale.

Water permit testing

"In addition to the standard tests to issue an operating permit, we do special chemical and water quality tests if the permit requires them, or if the site manager requests them," says Myers.

Testing continues throughout the year with at least a monthly check, and in some cases twice a month, in all hatchery complexes. "We do five basic water profiles on this schedule, with the Department of Environmental Resources determining the parameters and limits for the permits," says Myers.

These basic tests cover pH, biochemical oxygen demand (BOD), carbonaceous BODs, total suspended solids, ammonia-nitrogen and phosphorous.

"We also test for five metals when these analytical tests seem warranted. One permit requires a test for iron. Other metals are manganese, aluminum, copper and zinc. These last two are less frequently called for in the tests," says Truesdale.

Permit requirements issued by DER vary with the region and the needs of the site at the local level. For example, water samples from the Pleasant Gap Fish Culture Station are collected as required by a NPDES permit, which is issued to the Commission by the regional DER office in Williamsport.

Eight-hour composite samples (four grab samples over an eight-hour period, which are mixed together) are collected twice a month from three discharge outfalls. The samples should be collected during an average work day. The composite samples are collected by hatchery personnel, who complete a data sheet that gives the date and time of sample collection, the person collecting the sample, and the flow of the hatchery discharge. A hatchery influent sample is also collected for comparison.

Earl Myers or Dave Truesdale picks up the water samples and collects a grab sample for pH analysis. The dissolved oxygen is also determined at the time of the grab sample.

The Pleasant Gap samples are then tested under NPDES permit regulations for carbonaceous biochemical oxygen demand (CBOD), total suspended solids, pH, ammonia-nitrogen, dissolved oxygen, and total filterable phosphorus. Myers conducts the chemical analyses according to "Standard Methods for the Examination of Water and Wastewater."

Truesdale uses the results and completes a discharge monitoring report, which is submitted to the Williamsport DER office.

"We do other water testing for other divisions in the Commission that does not necessarily involve permits. For example, we do water quality tests for Fisheries Management and on request run samples of water from cooperative nurseries through the Cooperative Nursery Branch. Occasionally Law Enforcement will ask our help, too," says Myers.

"We run the basic NPDES permit tests for the coops and any special tests needed by other Commission personnel," says Truesdale. "For example, we also present basic testing information at seminars like the annual regional cooperative nursery meetings. These seminars include an explanation of the functions of the Water Quality Unit and its personnel."

The responsibilities of the unit—water quality analysis, drinking water analysis, sludge analysis, and water permits—are explained. The sportsmen receive explanations and illustrations of

the major water qualities related to fish culture: Temperature, dissolved gases, pH, alkalinity and ammonia. Each of these is given full treatment during the seminar. Water temperatures for gamefish are discussed by optimum and spawning ranges. Discussion of dissolved gases follows with emphasis on oxygen, nitrogen, and carbon dioxide. Needs and tolerance levels are included here.

Basic pH testing and definitions come next, followed by pH ranges for various species. Trout, for example, do best in a pH range from 6.5 to 8. Alkalinity is treated in a similar fashion with explanations of what it is, fertility indicators, and species ranges.

Finally, ammonia's source and potential problems with excess amounts are presented. Related issues of clean raceways, fish excrement and toxic effects of unionized ammonia complete the presentation.

The unit's testing for coldwater, coolwater and warmwater species varies according to the species involved. "Tolerance levels are tighter for the coldwater trout and related species and somewhat less stringent for the coolwater and warmwater varieties. The tests are conducted with equal care but rate of flow and dissolved oxygen (DO) are more critical to the welfare of the trout and salmon," Myers says.

Water—human consumption

The Benner Spring laboratory is certified for microbiology analysis. As a result, water testing can be done relative to human consumption and other purposes. Eight of the hatcheries have their own drinking water sources, which must be tested regularly for the benefit of the public and the employees. These fish culture stations include Bellefonte, Benner Spring, Fairview, Huntsdale, Oswayo, Pleasant Gap, Pleasant Mount and Reynoldsdale.

"Our major concern here is to check for coliform bacteria, and our reports on these tests are sent to DER," says Truesdale.

The fish culture stations mentioned above fall under DER's Non-community Drinking Water Program. This program requires that the drinking water be monitored once every three months for total coliform bacteria. Truesdale and Myers, or designated hatchery employees, collect the samples.

Grab samples must be refrigerated and the total coliform bacteria analysis must be conducted within 30 hours after sample collection.

Water quality is the most important work of the unit, but they do other field work and related lab work. Some hatcheries have sludge permits, and tests are conducted when sludge is applied. The results are reported to DER. Permits are a lot of work, Myers says, indicating that a number of complicated factors must be examined for each permit.

The sludge has a fertilizer and soil conditioning value but must meet DER standards. "Sludge tends to have a low pH, so we must test it and add lime if necessary to maintain a pH of at least 6.5 at the disposal site. The fresher the sludge, the less lime is needed to maintain proper conditions," says Myers.

The Water Quality Unit also tests aerators at various hatcheries for their efficiency in returning dissolved oxygen to the water. Dissolved nitrogen gas, which at excessive levels can harm fish, is also monitored.

"We've been doing some testing of a U.S. Fish and Wildlife Service degasser-oxygenator. It is a portable unit that can handle up to 40 gallons per minute that drives off nitrogen and adds oxygen from a tank to the water. It looks ideal for use in hatch houses and other spots where water volume is within range of the machine," says Truesdale.

Safety is a concern for the employees who may be in or working around certain toxic substances, such as formalin. So the Water Quality staff monitors the chemical storage areas and runs checks on personnel involved in these areas of possible contamination.

Facilities

The Division of Research and the Water Quality Unit have well-equipped laboratories with all the necessary equipment to complete their work.

Myers points out the wet chemistry laboratory where he is responsible for most of the testing. "We have two DO meters. We run our BOD tests here and have adequate refrigeration and incubation, which are needed for this type of work," says Myers.

This lab also has the necessary glassware and all the furnishings needed for a scientist's purposes.

"We make all our own buffers, regents, standard solutions and special compounds every month from stock chemicals. We have the storage facilities and for the most part achieve better quality control by doing our own as needed," says Truesdale.

The scientific team uses as the base reference, "Standard Methods for the Examination of Water and Waste Water, the bible for all testing."

Additional equipment in the wet lab includes two vacuum hoods for safety, a Muffle 550-degree C furnace, a pH meter for alkalinity testing, a still to produce distilled water, and an autoclave for sterilizing reagents and media.

There is additional specialized equipment in the second laboratory. Here the team has a spectrophotometer, supplying color-metric testing capability.

A gramatic balance, accurate to a ten-thousandth of a gram, and a pH wand complete the major equipment devices in this room.

"The pH wand, which is a portable unit, works really well," says Myers. "We use it mostly when pH analysis is required in the field."

In a quiet, behind-the-scenes manner, this Fish Commission unit adds its share to the tender loving care given to fish and humans. Both appreciate a clean aquatic resource.

Truesdale Receives Commission Safety Award

Dave Truesdale, leader of the Commission's Water Quality Unit in the Division of Research, recently won a Fish Commission award in the category of safety. For several years Truesdale developed, implemented and maintained safety procedures that have been used throughout the Bureau of Fisheries. These procedures, consistent with Right-to-Know Regulations, will be used as a model for the entire Commission.

Right-to-Know Regulations include labeling and education programs for handling hazardous materials.

THE BIGGEST FISH IN THE RIVER

BY JON ROUNDS

I stopped at the diner in McVeytown just after dawn, filled my thermos with coffee and went across the street to the bait shop.

On the wall was a four-foot muskellunge that all the fishermen stare at. The taxidermist had done a masterful job. The fish's long copper body was frozen in an arc, its jaws open, about to snap shut on a jointed Rapala the bait shop owner had hung on the wall above the tackle counter. The Rapalas were $7.95. I bought a dozen shiners.

The magazines say muskies are all up and down the Juniata, from Lake Raystown to the confluence with the Susquehanna at Clark's Ferry, but in two years of fishing the river, I had never seen one.

The grass was still wet and the October air cold when I backed the trailer down the narrow, rutted ramp and transferred the stuff into the boat. I brought one rod this time, a stout six-footer with 14-pound test line on a rebuilt Mitchell 300.

Fishing for big fish is like hunting, they say. You have to find your quarry and put something worthwhile in its face. Like a four-inch shiner, I was thinking. This bait is bigger than many of the smallmouth bass I've caught in this river, I was thinking, as I flipped the bait into the channel.

I fished for two hours with no results. The sun cleared the ridge and the mist burned off. As I drifted the east bank, trolling a shiner, the line suddenly snapped taut. I socked back on the rod, but it was a snag. I yanked it free, but lost the shiner in the process and had to put a bend back in the hook with the idiot pliers.

The idiot pliers. I bought them at a yard sale years ago and they have been the object of derision on several fishing trips. Ten-tools-in-one, does many jobs approximately, none well. I use them a lot.

I put another shiner on the hook, set the rod down on the gunwale and turned around to start the motor for another run upriver.

When I turned back round, I saw the whole thing.

I had left the bail open on the reel. When the shiner hit the water, it twitched downstream about six feet and the biggest fish I have ever seen materialized from the depths of the channel and—the only way I can describe it—casually inhaled the shiner and disappeared into the river with a flick of its tail.

The motor idled and line spiraled off the reel.

I shut off the motor, grabbed the rod, clicked shut the bail and hauled back on the rod with both hands. It felt like the fish had dragged the bait to the bottom and snagged the hook on a log.

Then the rod throbbed. The muskellunge was hooked.

The drag on the old reel buzzed as the fish ran downstream.

There was nothing to do but watch. I loosened the drag a half-turn and the line peeled off. The fish moved downstream like a barge 20, 30 yards and then surfaced at the tail of the pool and thrashed its alligator head.

It occurred to me then, as I watched the line buzz out, that the fish was solidly hooked and my line was fresh and I wondered how much the fish on the bait shop wall cost per inch to mount. This fish was at least that big.

I glanced up and saw the Ryde railroad bridge and a problem. In a few minutes, the boat would drift up on the shoal directly upstream of the bridge.

I scrambled forward with the rod in my left hand, picked up the anchor off the front seat and was about to throw it in when I realized the anchor rope wasn't tied to anything.

I stuck the rod butt between my knees, leaned over the bow and looped the rope through the bow handle, tied some kind of knot and flung the anchor overboard. As I did this, the fish thrashed again and nearly jerked the rod from between my legs.

A flotilla of Girl Scouts in canoes appeared upstream. The scoutmaster, a thin, white-haired man, spied me and hollered for the canoes to swing to the far bank, out of the way.

"Thank you," I said over my shoulder.

"You bet. What do you have on?"

"A big musky."

"Hey you guys! He's got a musky on," a girl in one of the lead canoes yelled to the pack.

"What's that?" another girl asked.

"It's the biggest fish in the river," the scoutmaster replied.

All eight canoes paddled to the bank. The scoutmaster beached his canoe and the rest of the girls held onto one another's gunwales, forming a floating gallery.

I loosened the drag a half-turn and the line peeled off. The fish moved downstream like a barge 20, 30 yards and then surfaced at the tail of the pool and thrashed its alligator head.

illustartion- George Lavanish

Maybe because I had read that muskies have bony mouths into which it is difficult to sink a hook or maybe because of the gallery, I decided it would be a good idea to set the hook again.

I jerked back on the rod. I don't know what it did to the hook, but it aggravated the musky to no end. The fish shot to the surface between me and the canoes and flung gallons of water hither and yon, thrashing its head from side to side.

"Wow!" said a Girl Scout.

The fish took off again, but the buzz of the drag was lower-pitched and the run was short.

I tightened the drag a quarter-turn and began reeling. My wrists were sore. I pumped the rod and reeled, pumped and reeled, until the fish became a throbbing weight on the end of the line.

When the fish saw the boat, it turned, sending a geyser of water into the air and peeling several yards of line back off the reel.

I got a good look at the fish for the first time as it finned back and forth just beneath the surface, an oar's length from the boat. It was huge—50 inches long, maybe 35 pounds.

I thought of the fish on the bait shop wall, thought of the muscles and sinew of this fish layered with varnish, it's fierce eye replaced with glass.

It was an easy decision.

I twisted the drag another quarter turn and reel the fish next to the boat, where it lay, gathering itself.

I grabbed the idiot pliers, reached down and took hold of the hook shank, which was stuck clean through the side of the fish's jaw.

I twisted the hook back and forth gently until the hole was widened. Then I squeezed the barb shut and pulled out the hook. The fish lay nearly motionless for a second or two.

I glanced over at the scoutmaster and the Girl Scouts. They were staring at the fish.

If the fish were dead, I thought, there is still time to scoop it out of the water. I glanced at the scoutmaster and there was, I think, a trace of a smile on his weathered face.

The fish regained its senses, and with a flick of its tail, disappeared into the river.

Reprising the Palomino

by Linda L. Steiner

No one is neutral about the palomino trout. To some anglers it's a "glory fish," and to others, mere "fool's gold." Whatever your personal preference, after more than 25 years, this hybrid of the rainbow trout is still very much a part of the Fish Commission's stocking program. Beginning this year, the palominos stocked will be better eye-catchers and tackle-benders for more anglers than before.

There's no ignoring a palomino trout in the stocking bucket or the stream. They're the ones that look as if they've been dipped in sunshine. As hallmarks of their rainbow lineage, palominos retain a hint of rose on their gill flaps, fins and stripe down the side, but they have lost the spots.

Palominos have been a part of the Pennsylvania angling scene since the late 1960s, when their stocking first began. These original fish were the "excess" available as the result of genetic work done by the Fish Commission into the reproductive phenomena of the West Virginia Golden Rainbow Trout.

In any large-scale animal husbandry, including fish, unusual gene combinations or mutations occur, sometimes with happy results. Such was a single female rainbow trout spawned in the mid-1950s in West Virginia. Her body was a surprise, a mosaic of gold and dark. Through subsequent breeding of her and her offspring, Mountain State fisheries biologists developed the sunny-bright, true-breeding golden rainbow trout. Coincidentally, it was just in time for that state's centennial anniversary.

The "new" golden rainbow trout was still just a rainbow of a different color. To biologists it was known as *Salmo gairdneri*. It was not the California Golden Trout, another species, *Salmo aquabonita*, found in a few Western states. The golden rainbow, though, was soon to influence irrevocably the face of fishing in Pennsylvania.

In the mid-1960s, biologists Keen Buss and James Wright, Jr., working at the Fish Commission's Benner Spring Research Station, crossed West Virginia goldens with genetically normal rainbows. Over several years they developed the fish that was to be stocked in Pennsylvania, the palomino trout. This was done as part of our state's "Golden Age of Conservation." It appears that the gold-hued fish have always been associated with a celebration.

The palomino is a true genetic palomino, like the horse. Equine enthusiasts know that mating two palomino horses results statistically in half the offspring palomino, one quarter brown and one quarter white (not albino). Crossing palomino trout results in 50 percent palominos, 25 percent golden trout, and 25 percent regular rainbows. Besides their intriguing color, the palominos showed an aggressive growth and health, known as "hybrid vigor." This quality made them grow larger faster, obviously an advantage to anglers.

First stocking

From its first limited stocking in 1967, the palomino was an attention-getter. By the early 1970s, more than 20,000 were planted statewide. The palominos that were sprinkled in the loads of trout bucketed from stock trucks, or that were seen as occasional yellow flashes in creek holes, became a fixture in the Pennsylvania trout fishing scene. But where is the palomino today, and what does the late 20th century angler think of it?

By 1990, nearly 50,000 palomino trout were produced by the Commission's various fish culture stations and mixed into each hatchery's shipments along with the allotment of rainbow trout as substitutions. These palominos were mainly yearling fish, only about 10 inches long. Also, 2,000 trophy-sized palominos were stocked statewide each year. But there remained no comprehensive plan on the use and production of palomino trout.

According to Dennis Ricker, chief of the Fish Commission's Division of Trout Production, and Marty Marcinko, fisheries biologist with the Coldwater Unit, beginning in 1991, all that will change. Starting this year, anglers will be fishing not only for better palomino trout, but also for greater numbers of trophy-sized fish spread throughout more waters of the Commonwealth.

Why did the Commission choose to revamp the palomino program and exactly what will it mean for anglers? In the past few years, according to Ricker and Marcinko, deterioration was noticed in the quality of the stocked palominos. They had become sickly-looking, not the sun-bright prize that anglers were meant to be catching. At the hatcheries, only 10 percent of the palomino eggs were hatching, compared with over 70 percent of other trout eggs. The survival rate of the young fish to adult size was also poor.

The problem could be traced to the uniqueness of that one West Virginia fish, ancestor of all Pennsylvania palominos. There was a small gene pool to begin with, and subsequent circumstances did not expand it. Hatcheries that stocked palominos relied on repeated crosses of their own few brood fish. After all, not many were needed to meet the palomino stocking quota, and for a time that strategy worked. But eventually, through continuous breeding of a limited number of isolated fish, the diversity of the gene line, so important to the health and appearance of the trout, was reduced.

Perking up palominos

Three years ago the Commission decided to take several steps to recharge the palomino. First, the Commission discontinued the use of palomino brood stock at each of the hatcheries. From then on the breeding fish would be kept and controlled at a central location, in fact, right back to their great-great-great (etc.) grandparents' birthplace, the Commission's Benner Spring facility in Centre County.

To maintain diversity in the gene line, the Commission needed 60 different pairs of male and female palominos. Biologists selectively crossed the individual fish for the best characteristics of appearance, growth and health, as if they were prize race horses or show dogs.

The result of this control in the past several years has been a rebirth of the palomino. Controlled breeding has reinstilled the advantages of the palomino's hybrid vigor, giving it again a speeded-up metabolism, better growth and aggressiveness. In fact, the fish are getting very close genetically to the true golden rainbow trout.

The attraction of the palomino is that it is a unique-looking fish to catch. In accordance with providing a special angling experience,

the Commission also decided to do away with stocking small, yearling palominos and go entirely with a trophy program. This year the Commission expects to stock some 10,000 palomino trout, each from 15 to 20 inches and each weighing up to four pounds.

It takes two to three years to grow fish of this size, making them more expensive fish to raise. But it will be worth it when anglers find that the fish that has always been a novelty has now become a serious lunker as well.

The trophy palominos will also be stocked in additional lakes and streams starting this year, so more anglers should get the chance to fish for them. Whether or not this will be welcome by all is another story. Since its inception, the palomino has caused, if not outright controversy, at least a polarization of the legion of Pennsylvania anglers.

Hybridization experiments

Practically since fish culturists found it was possible to propagate trout artificially, there have been experiments with hybridization. Other cross-breedings were attempted, with varying degrees of success. These attempts included the "splake" (brook trout x lake trout), the "tiger trout" (brown trout x brook trout), the "brownbow" (brown trout x rainbow trout) and the "trousal" (brown trout x Atlantic salmon). With most of these crosses there were high mortality and infertility of the offspring.

The palomino is a result of a variation within the rainbow species. It's not the only rainbow mutation known. Occasionally a blue rainbow will turn up at a hatchery, an oddity that results in a beautifully aqua-blue body color. At one time Pennsylvania was also experimenting with the albino brook trout, pale and pink-eyed, but it did not catch on as a stocked fish.

Although it has been practiced for centuries with other animals like cows, dogs and horses, genetic manipulation of trout, even if the result is attractive, is not universally palatable to anglers. Perhaps because the act of going fishing is getting back to the basics, to things as nature intended them to be, the "manmade" palomino does not suit everyone.

However, the other trout stocked in Pennsylvania, the brook, brown, and rainbow, are not "natural" either. They are actually domesticated strains that have thrived in hatchery conditions, genetically far removed from their wild counterparts. Pennsylvania's hatchery stock of brookies, for instance, was originally developed in New Jersey. It's not that culturing techniques weren't attempted with our own native brook trout. It's that their very wildness made raising them too difficult. Pennsylvania's brown trout were originally European, and the rainbow trout came from the western U.S., all from domesticated strains as well.

It's true that the palomino is a freak, but that's not to say it's a "Frankenstein" fish. It gained popularity because of its astounding beauty. To some anglers, any day in which they hook and land a big, gold palomino is counted as one of the most outstanding days of the season. Whether the catch is the subject of a photo and returned alive, or memorialized as a mount, the lunker palomino is a "bragger." Witness how hard the holes are fished in which palominos are seen. To some anglers, there is no greater trophy.

But as some people prefer blondes, some like brunettes. Another faction of the angling crowd dislikes the existence of the flashy palomino as a "fake fish," preferring the conservative tones of the brown trout, with its cache of Old World angling and European gentry, or the time-honored tradition of the brook trout as an American original. However, the brown trout itself was looked on with distaste as a spoiler when first imported, and the rainbow, with its mad red slash, was viewed by some as "inappropriate" when it was first shipped East. It's simply a matter of taste.

Other anglers may wonder about the effect that the introduction of palominos may have on a stream. Because palominos are so easily seen, they are fished for specifically not only by anglers but by blue herons, kingfishers and other animals. They do not last long. Palominos are stocked where they will not overwinter and reproduce and create another type of trout indigenous to the state. They are intended as a social phenomenon, for put-and-take fishing. Because they don't create a biological disturbance to native stock, they are an acceptable part of the stocking program. So why not provide a novelty if anglers want it?

With such high visibility, literally, the palomino trout is a subject about which every angler has an opinion. The palomino is either loved or hated, according to individual ideas on what trout fishing should be. There's no denying that the gaudy fish is an attention-grabber and will be even more so in the future, now that they're going to be available in just one size: Big.

Linda L. Steiner

In addition to their intriguing color, palomino trout show an aggressive growth and health, known as "hybrid vigor."

Linda L. Steiner

Let's Go Trout Fishing in Pennsylvania

Let's Go Trout Fishing in Pennsylvania is the title of a new Fish Commission pamphlet. This full-color publication identifies the five species of trout found in Pennsylvania, including the palomino. It also provides details on where to fish, when and how to fish for trout, fishing on private land, and specially regulated areas. In addition, the pamphlet lists all approved trout waters in Pennsylvania.

For a free copy contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673. With requests please include a business-sized self-addressed, stamped envelope.

Fine Points of Tackle and Technique

by Art Michaels

I've had opportunities over the years to fish with some of the most knowledgeable, successful Pennsylvania anglers. And even though I'm no dummy when it comes to fishing know-how, comparing some of my ideas to these guys' procedures and techniques is like putting a [illegible] against a [illegible] ladder. [illegible] wide-eyed and open-mouthed. The ideas weren't complicated. In fact, they seemed so simple! My reaction to these tips and to the results of putting each hint into action was, "Of course! Why didn't I think of that?"

Dan Martin

This goes to show that the best fishing ideas are sometimes the most simple. Here are some of these terrific angling hints. Put them to use and enjoy more successful fishing.

Knots

If you're like me, you've been tying fishing knots for a long time, and you think you're OK at it. That's the problem. Many anglers get into a "knot rut." They learn to tie a few knots well, and those knots are the only ones they use. But the knots they know aren't always the best knots or even the simplest knots to tie for an application.

The first thing experts do when tying fishing knots is use the best knot for each situation. For example, on one smallmouth bass trip, I used a clincher knot and my partner used a Palomar knot to tie our hooks to the line. We used ultralight gear with four-pound-test line to tempt smallies with live minnows while floating the Juniata.

On several tries, even after re-tying the knots and each of us switching between knots, the angler using the improved clincher knot broke off fish at the knot before the Palomar knot gave.

The point is that the improved clincher is a great knot, but it isn't the only knot. In place of an improved clincher knot, try a Palomar knot. You might also discover that the Palomar knot holds better than the improved clincher knot, especially when it comes to battling that three- or four-pound smallmouth among the 10- and 12-inchers.

Knots often break because the mono strands wrap around one another when they shouldn't. This is especially true with coiled knots, like the improved clincher, spider hitch and Trilene knot. To moisten the mono, just put a knot in your mouth for a second before tightening it. Your knots will pack down harder and smoother, and that makes them stronger.

Line

Experts fish a lot. Most of them change their line every now and then during the season because fresh line is least likely to break. In this way they lose fewer fish, and because their lines are mostly undamaged, they bring in the big ones that other anglers lose.

The last few yards of line take the most punishment, so it pays to remove nicked, frayed and cut line. Remove about 10 feet now and then from the end of your line. Then you fish with fresh line, and when you battle a big one, it's reassuring to know that your line is fresh and undamaged.

Tackle

Experts also take good care of their tackle. They service their reels regularly, and they clean them after use. The most successful anglers also fine-tune their reel drags.

The experts I know service their reels every season, or they have someone do that for them. These guys know that only tackle in tip-top shape can stand up to the biggest fish over and over again. And after a day's fishing, loosen your reel drag setting. This prevents the drag washers from developing a "set."

Pros also use a wisp of cotton or a piece of nylon from a stocking to check the condition of rod guides. They run the cotton or nylon through the rod guides, especially the tip-top. If it snags, the inside of the guide is cut or nicked, and that could shred the line.

Of course, you'll want to replace guides that don't pass this test.

The experts are also very much like Boy Scouts. "Be prepared" to them means fishing with a variety of tackle to do the job in just about any situation. For instance, on a river smallmouth bass trip, I've seen experts use light casting tackle for easy, sporting, fun fishing. But for different smallmouth conditions that they encountered on the same trip, they also brought beefier jigging outfits with heavier line.

I saw trays and trays of lures and terminal tackle. These experts prepare with varied lure sizes, hooks of all kinds and sizes, more swivels and snaps than some tackle shops have, and spare reel parts and maintenance items.

On the other hand, these pros don't clutter their boats and tackle boxes with items they know they don't need. They stock their tackle boxes and boats thoroughly but economically.

Small stuff

Expert anglers also take care of the little things. They wear polarized sunglasses on the water. They use sun block. They dress in layers when chilly dawns become warm days and when balmy afternoons become cool evenings. They don rainsuits during downpours. They keep first aid kits handy and well-supplied.

Many of these experts drape hand towels from their belt loops, and they all use hook disgorgers—pliers, hemostats and other designs.

They are all conservationists, too. They return nearly all the fish they catch, and they never kill a fish they don't intend to eat. These guys also place small litterbags somewhere in their boats. Trash never goes over the transom, and when they see litter they often pick it up and stash it for proper disposal.

Boating bits

Experts operate their boats deftly, too. For one thing, some of these guys use enough electronics, you'd think you were aboard Captain Kirk's *Enterprise*. In all cases, though, they have the electronics they need for the kinds of fishing they do. What appears initially as extravagance is actually thoroughness, efficiency and skill.

Each expert uses his electronics like a Nintendo champion. When you use each electronic device you own to its fullest potential, your fishing competence and boating skills increase.

And these angling experts are very serious about their sport. I see notebooks full of Lake Erie loran TDs, and coordinates and notes scrawled on navigation charts. I notice hydrographic maps with contour lines outlined in magic marker, hotspots circled with notes on finding these places, and maps and charts cut to various sizes for easy handling.

They maintain clean boats, too. They stow items carefully, rig tackle before they leave the dock, and prepare all their boating gear before shoving off. When these guys use bait and the action heats up, they waste no time washing the decks of their big boats and their small boats. They routinely scrub the gunwales and the deck, or brush out their boats, and before heading in, the boat is spotless, ready for the next fishing trip.

Some of these guys are charter captains, and whether they fish by themselves or with a mate, whenever someone uses an item of tackle or some other gear, when the person is finished, the item is stowed again. Nothing is ever left on the deck or shoved into a corner.

Extra cleats, ties and holders of all sorts dot their boats. These experts are obviously storage sticklers, but the extra care leads to increased efficiency and safety.

The payoff for all this? I wondered that, too, for a long time. After all, there's no sense adopting a habit for no good reason.

Considering all the expert anglers I've fished with, even on slow days, these guys manage to drum up at least some action. Most other times, they catch more fish and bigger fish than anyone.

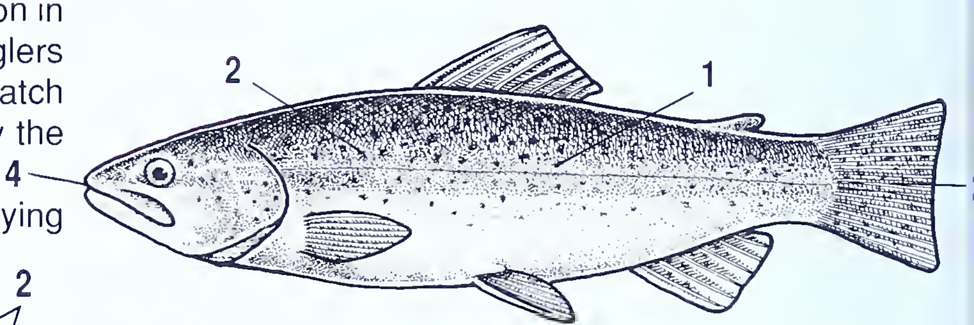
KidsPage!

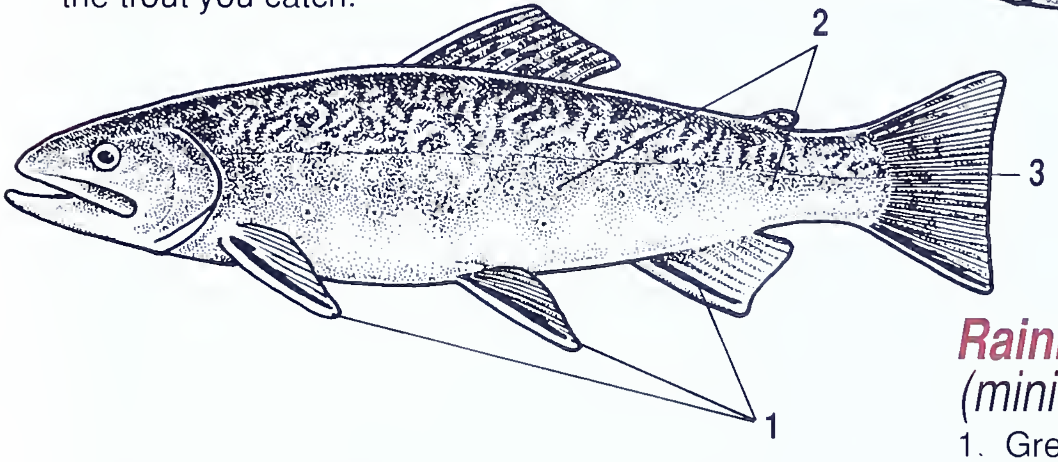
by Steve Ulsh

Trout — Which is Which?

April 13, 1991, is the beginning of trout season in Pennsylvania. If you're one of the millions of anglers out on the opening Saturday, chances are you'll catch one or more of several kinds of trout stocked by the Fish Commission.

Here's a handy guide for you to use in identifying the trout you catch.



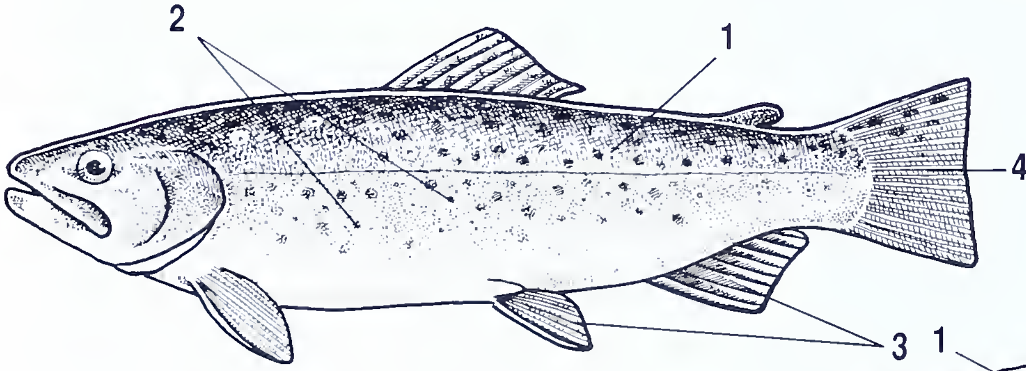


Brook (minimum size 7 inches)

1. Front edge of pectoral fin is lined in white.
2. Usually red spots with bluish halos on body.
3. Tail is squarish.

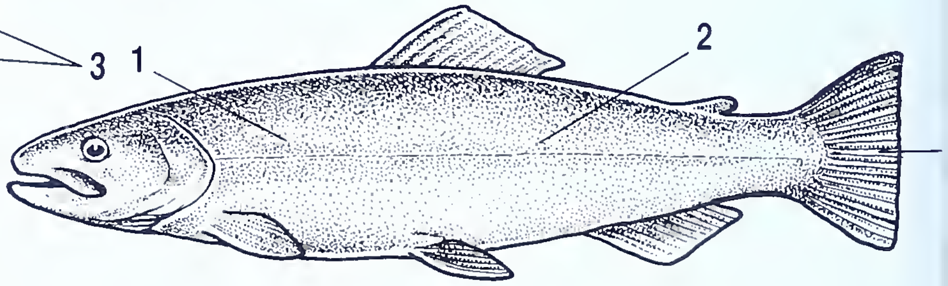
Rainbow/Steelhead (minimum size 7 inches)

1. Greenish body. Adults usually have a pinkish lateral stripe. Steelhead are more silverish.
2. Usually many small black spots on body.
3. Tail heavily spotted.
4. Inner mouth and gums are white.



Brown (minimum size 7 inches)

1. Body golden-brown color.
2. Scattered large dark spots with pale halos on body; reddish or yellow spots often seen.
3. Yellowish-brown fins—unmarked.
4. Few or no spots on tail.



Palomino (minimum size 7 inches)

1. Body deep-yellow to orange-like color.
2. Sides unmarked except for possible darker-orange lateral line.
3. Squarish tail.

illustrations-George Lavanish

ANGLERS CURRENTS

Boat Trim

Riding in a boat that is not properly trimmed is like driving a car with worn shock absorbers. In either case, the vehicle handles poorly and you get an uncomfortable ride. Fortunately, it's usually easy to fix the problem with a boat and much less costly than getting a set on new shocks for the car.

Several problems develop when the outboard motor or drive unit of an I/O is trimmed in too far. The top of the engine tilts away from the boat while the prop tilts closer to the boat. Fuel economy decreases, top speed drops and the boat may oversteer in one direction or another.

Trimming an outboard or drive unit too far out causes different but equally undesirable characteristics. The propeller may lose its hold on the water. Fast V-bottom boats may start to "walk" from right to left to right. Steering torque—a feeling of resistance in the steering wheel—may also develop. Getting the boat on plane may be difficult. In extreme cases, the boat could porpoise.

"Porpoising" is an apt description of what takes place when a boat has too much trim out. The bow rises and falls rhythmically, providing an uncomfortable ride every time the boat slaps back to the water's surface.

In a boat with power trim, these wrong trim positions can be corrected by working the power trim control slightly.

A smaller outboard not equipped with power trim can be adjusted by moving the tilt angle pin either closer to or farther away from the boat.

Information for New Boat Owners

I Just Bought a Boat! Now What Do I Do? is the title of a revised, updated Fish Commission pamphlet. The publication explains vital information that new boat owners need to know. Topics include boat registration, sales tax, user fees, displaying registration numbers, and taking your boat out of state.

Single copies of this publication are free, but with requests please include a business-sized stamped, self-addressed envelope. Contact: Boating Publications, PA Fish Commission, P. O. Box 1673, Harrisburg, PA 17105-1673.

Third Environmental Quality Index

The Pennsylvania Wildlife Federation's Third Environmental Quality Index details the past year's environmental gains and losses in Pennsylvania. The eight-page printed report features seven categories: Air, energy, land use, soils, waste management, water and wildlife. For complete details, contact: Pennsylvania Wildlife Federation, 2426 N. Second Street, Harrisburg, PA 17110. The phone number is (717) 232-3480.

10 Fueling Tips

✔Always remove portable tanks from your boat for fueling.

✔Shut off motors that could make a spark or heat. Turn off electric equipment and liquid propane gas tanks.

✔Close all windows, doors and openings before fueling. Overcome the tendency to leave everything open. Closing all compartments prevents vapors from seeping into the boat.

✔Try to fuel before dark. If you need light, use a flashlight or another light that is spark-proof.

✔Never smoke near a fueling dock or when fueling. Extinguish tobacco that might smolder.

✔When filling a tank from a gas can, touch the fuel pipe or tank with the spout while pouring. This prevents buildup of static electricity, which could produce a spark.

✔Similarly, when fueling from a pump, keep the nozzle in contact with the tank.

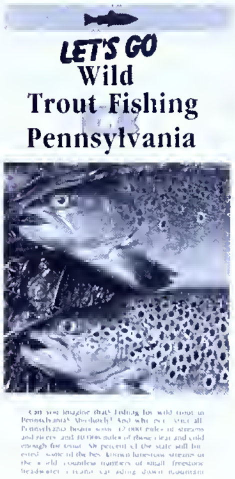
✔After fueling, wipe up all spilled gasoline, and air the rag after use. Never throw it into the boat or in the water. If it must be stored, seal it in a tightly covered metal container.

✔Gasoline vapors from low pockets in the bilge must be drawn or forced out. Open all doors, windows, ports and hatches. Let the air blow through for at least five minutes. Use only explosion-proof fans with spark-proof switches to clear the air of fumes.

✔Lastly, check all fuel lines and connections again for leaks. Sniff around gas lines, motor and bilges. When vapors are gone, start the motor.

Zebra Mussels Grip Pennsylvania

What You Should Know About Zebra Mussels is the title of a new Fish Commission pamphlet. It includes information on how zebra mussels live and reproduce, how zebra mussels affect our waterways, and precautions that boat owners should take. Single copies are free. With requests please include a business-sized stamped, self-addressed envelope. Contact: Publications Section, PA Fish Commission, P. O. Box 1673, Harrisburg, PA 17105-1673. For more details on zebra mussels and how they affect Pennsylvania waterways, see page 4 of the October 1990 *Pennsylvania Angler.*



Wild Trout Fishing Publication

Let's Go Wild Trout Fishing in Pennsylvania is the title of a new full-color Fish Commission publication. The pamphlet is geared toward resident anglers and visiting fishermen. It provides information on limestone and freestone streams, how to fish, when and where to fish, getting to streams, lodging, fishing licenses, and Pennsylvania's wild trout. The publication also features listings of Pennsylvania's Class A wild trout streams and wilderness trout streams. The lists include each stream's name, mileage of Class A or wilderness designation, county and nearest town. Single copies are free, but with requests please include a business-sized stamped, self-addressed envelope. Contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

ANGLERS CURRENTS

The Fish Commission's 1991 Pocket Guide shows seasons, sizes and creel limits for inland waters and Youghiogheny Reservoir. It's a handy, concise reference to carry astream, keep in your tackle box and stash aboard your boat. Single copies are free, but with requests please include a stamped, self-addressed envelope. Contact: Publications Section, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Art Michaels

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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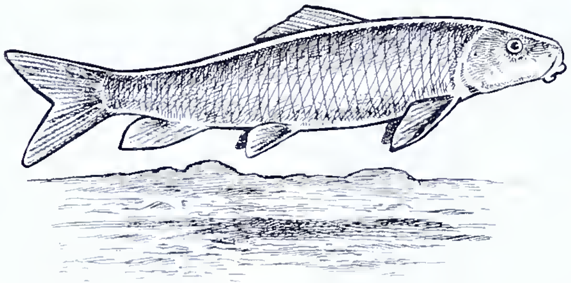
Angler's Notebook

by Chris Dolnack



Shortly after ice-out, white suckers begin their spawning run up feeder streams. Suckers are easily caught by using garden worms, and the firm, flaky white flesh is tasty when smoked and in chowder.

Start your trout season early by testing your skill on one of the state's fly-fishing-only areas. Consult your *Summary of Fishing Regulations and Laws* for locations and restrictions.

Spring spawning activity brings fish into shallow water. Following the spawn, these fish—walleye, perch, crappies, bluegills and bass—go on a feeding binge to speed recuperation.

After being stored for the winter, fly lines have memory and coil. Stretch them slowly until you feel the lines "give," to put new life into them.

Walleye prefer shallow, rocky shorelines and reefs for spawning because the eggs fall into the numerous crevices and are protected from predators. Work slender crankbaits and bucktails tipped with minnows along the shoreline to score.

WCOs begin preseason stockings this month. Dates and meeting places are frequently announced in local newspapers. Many hands make the work light, and youngsters in particular enjoy helping to stock trout.

Now is the time to begin collecting worms and nightcrawlers for the coming season. A foam cooler and commercial worm bedding are all that's needed to keep healthy bait at your fingertips throughout the season. Be sure to mix the bedding according to the instructions. After mixing, leave it uncovered in a cool place for at least 24 hours. The organic materials, when mixed, undergo a heat-rendering reaction that is lethal to your worms.

Mark the handle of your fishing rod with the minimum legal size limits. Measure from the rod butt and mark the important measurements for each species with an indelible marker. This makes determining whether a fish is legal to keep a snap and greatly increases the recovery rate of those fish that are released.

Light line imparts greater lure action and running depth. For trout, four- or six-pound test is a good choice. For smallmouth and walleye try six- or eight-pound test. Largemouths are best tamed on eight- or 10-pound test.

Living rubber jigs are popular early spring bass baits. For smallmouths, try a small mushroom-head jig tipped with a minnow. For largemouths, use a larger weedless jig and pork eel trailer. In cooler water, the slender eel usually out-produces popular pork frog trailers.

Be sure to grease all the fittings on your boat trailer and repack the bearings. Check the tires for cracks and inflate them to their recommended level. Check the trailer lights for moisture that may have gotten in over the winter. Dry them out and reseal them before use to avoid shorting the system.

illustration- George Lavanish

On the Water

Catch and Release

with Dave Wolf

Cheryl Riley

A strong trout fights in the icy currents below you. It surfaced only for a moment just seconds ago and you know that it is a large trout, perhaps your largest of the year. Your heart is pumping hard. Adrenalin is shooting through your veins. This is a trout you must see, a trout that you must inspect closely.

The trout tires and you lead it to you. It is a large brown with white-feathered fins, copper-toned and yellow-bellied with red spots the size of dimes. Then you calculate his size and weight. He is well over 20 inches, pushing 25, and you are certain he goes a good seven pounds. Then you twist the hook free and watch him swim ever so slowly until the currents swallow him from view.

Catch and release is a philosophy that has touched all, even those who would never think of practicing it. It crept into trout fishing first in Pennsylvania, but was held in high regard by only a few of the more elite fly fishing circles who scorned those carrying shiny metal stringers heavy-laden with a limit of trout. God forbid that they be wild trout, for the longer the trout resided in a stream the higher the esteem bestowed upon it. Eating a wild trout was akin to the stealing of horses in the wild West.

But the concept grew and special areas were set aside by the Commission for those who wanted to catch and release their trout. Today such areas are crowded with anglers the season long—today trout fishing no longer means "taking a limit," although the Commission does manage areas for the harvest of stocked trout. Today, a large portion of those who fish for trout release at least some of their catch.

Trout fishermen have always been looked upon as a rather elite group and it was of little surprise that they first practiced catch and release. But it was a bit surprising to find that bass fishermen quickly followed suit. Prompted, in part, by nationally televised bass fishing tournaments that practiced catch and release, the releasing of bass swept through the state like wildfire. Nearly every outdoor program televised today advocates the practice and anglers are releasing everything from bluegills to muskies. In fact, peer pressure from many anglers has made those that keep fish feel like I did when I would sneak a cigarette on school property some years ago.

No matter what the reason, the catch-and-release philosophy grew from within the ranks of sportsmen throughout this state and others. They, in fact, asked for the catch-and-release regulations. They were not forced upon them. The Commission sets creel limits in order to allow fishermen to take a number of fish without hurting the resource. Many fishermen have taken to restricting their catches far below legal limits.

Some argue that it is the waste of a resource. Others feel that releasing fish does nothing but improve the fisheries and allows a fish to be caught time and time again. No one knows how many times a fish can be caught and released, but I know that I have taken the same trout on seven different occasions and have no idea how many more anglers had caught and released the same fish.

Certainly there is strong argument for catch and release, but there is also a flip side to the coin—trout, for example, stocked in waters that warm above the trout tolerance sometime in July or even mid-to-late June. Consider also bluegill populations that become stunted because of over-population in some lakes, and coho that run our tributaries of Lake Erie to spawn, most often unsuccessfully, and die.

Catch and release is an admirable, ethical standard, one that I abide by in my own fishing, but it is something that should not be forced upon all. Fish taken within bounds of the law should not hurt the resource, and those who enjoy a meal of bass, walleye or trout should not be deprived of it. But the bottom line is quite simple; take only what you can use and leave the rest. There is no need to take home a limit simply to be bragged over and then lost to freezer burn. Cameras can sufficiently capture the moment and last much longer than fish to be shown and touted about.

The Indians used the resource wisely and it seems that man is following their example. If you need it and are going to use it, take it. The resource managers will set the limits needed to protect the resource. If you are not going to make good use of it, return it. On another day an angler may cast to your waters and capture the same fish. It is then his decision on how he will use the resource you so kindly left for him.

Remember, except where dictated by law, catch and release remains the option of the angler who has caught the fish, and although no sportsmen should condone the waste of a resource, none of us should condemn those that choose to use it wisely.

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Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

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Straight Talk

125 Years of Progress

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

On March 30, 1866, Governor Andrew Curtin signed Act 336, which established the post of Pennsylvania Fish Commissioner. The first commissioner was charged with the responsibility for management of Pennsylvania's fishery resources, which at that time were limited to the migratory fishes in the Susquehanna River. In 1873, the effort was expanded to a three-member Commission, and this responsibility has been expanded by additional legislation throughout the past 125 years. Today, protection, enhancement, conservation and management of Pennsylvania's valuable fishery resources is in the hands of the 10 commissioners who comprise the Pennsylvania Fish Commission.

In 1931, Act 121, the first motorboat law, was enacted and the Fish Commission was given the additional responsibility of regulating and managing motorboating activities on Pennsylvania waterways. Today, fishing and boating activities are dovetailed into all Commission efforts to provide the most effective services and recreational opportunities for all anglers and boaters.

During this long heritage, 125 years for fisheries and 60 years for boating, Pennsylvania has developed programs and facilities while providing countless hours of recreation for Pennsylvania residents and our many visitors.

Pennsylvania has some of the most beautiful waters found anywhere, and they provide a wide variety of fishing and boating opportunities. Hundreds of lakes, 42,000 miles of rivers and streams, and 42 miles of Lake Erie shoreline offer unlimited fishing and boating. There are 365 days of fishing activity available each year, during sultry summers and the coldest winters.

The Pennsylvania Fish Commission has handled the challenges of these past 125 years efficiently and successfully. Its many progressive programs have received national recognition and have earned widespread respect. The Commission's enlightened approach to the needs of the aquatic resources, together with strong public support from the fishing, boating and conservation-minded public, makes the Commission a unique organization.

Although its accomplishments during its 125-year history are impressive, the most impressive achievement is the fact that all Commission operations and the majority of its land acquisitions and developments have been financed by anglers and boaters—not the taxpayers. This "user-fee" method of program funding adds to the uniqueness of Pennsylvania's fishing and boating programs, and places special challenges and demands on the Commission and its staff to operate in an efficient business-like manner. The agency must operate within a "balanced budget" and conduct its programs to maintain a high level of public interest and involvement. Few public agencies operate in this manner, and few agencies are able to attract and retain the highly motivated and dedicated professional staff needed to maintain such long-term success.

Anglers and boaters have been very generous in their support of Pennsylvania's fishing and boating programs and deserve much credit for the Commission's 125 years of progress. A review of Commission efforts during these past few months clearly indicates that its 125th year is one of its most rewarding for staff, sportsmen and most importantly, the Commonwealth's valuable resources, both natural and human.

How long can the Commission continue to operate successfully as a professionally managed sportsmen-supported agency? The answer is simple. It can continue indefinitely if the anglers, boaters and other concerned individuals continue to provide needed "user fees," and if they insist that the agency is permitted to protect, conserve, enhance and manage Pennsylvania's fishing and boating resources without unwarranted political interference.

Pennsylvania cannot afford anything less.

1866-
1991
125 years

MAR 29 1991

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Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

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The covers

This issue's front and back covers, photographed by Mark Dauberman, show a nice rainbow trout caught last April in southcentral Pennsylvania. As we get ready for the season, let's remember the volunteers who over the years have helped the Commission protect, conserve and enhance our resources. Their story starts on page 4. Trout fishermen have a wealth of helpful information in this issue in the articles on pages 12, 14, 16 and 20. As the American shad in this year's run swim upstream, keep close tabs on their whereabouts by using the information in the article on page 8. Lastly, all anglers and conservationists will have an opinion on the information spelled out in the article on page 31.

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HATS OFF TO COMMISSION VOLUNTEERS

1866-1991

125 years

BY BILL PORTER

Volunteerism is serving in a specific capacity willingly and without constraint or guarantee of reward. The Commission has several programs for volunteers, and these people provide valuable services to the Commission and to the state's anglers, boaters and conservationists. As we celebrate the Commission's 125th anniversary, let's check out the past, present and future needs for volunteers in the Commission, and the work they do.

The modern complexities of the Commission's operation place increasingly greater demands on personnel. These requirements spill over into the work of more specialized volunteers who may need expertise or training beyond the simple desire of wanting to help out.

By the same token, both the Commission and the volunteers share a responsibility to the fishing and boating public for quality service. This concern was, perhaps, best expressed by Samuel Johnson a century or so ago. "Ignorance, when it is voluntary, is criminal!" said the venerable Johnson.

Bureau of Law Enforcement

Records are obscure concerning exactly when the deputy force was created. In 1903, however, the number of salaried fish wardens was 12, but "special wardens" could have been appointed. In June 1903, 145 special wardens covering most of Pennsylvania's counties were appointed.

"We're probably one of the prime users of specialized volunteers," says James R. Smith, Bureau of Law Enforcement assistant director. "Our deputy division is most important to fish and boat code enforcement, general safety programs, and litter and water pollution violation apprehensions. The waterways conservation officers rely heavily on the deputies for patrol purposes, emergency situations and a host of other enforcement concerns."

The field officers are spread thinly over the state with one officer per county as the intended ratio. The volunteer deputy force augments this group by 350 to 400 officers a year with some normal fluctuations occurring. These volunteers are deputy waterways conservation officers (DWCO).

A number of the deputies bring some matching law enforcement skills and training to their Fish Commission posts. Bob Houser, Cumberland County, is a full-time guard at Cumberland County Prison. One Perry County deputy is a full-time staff member at Little Buffalo State Park and brings park ranger training to his Commission duties.

Other volunteer officers come from varied backgrounds and interests. Some are conservation-oriented; others enjoy community service and opt for the Commission's field work. In any event, the deputy force is primarily a group of dedicated younger adults who have survived a selection and training process to become deputy law enforcement officers.

The selection process is extensive. Initially, the applicant needs a high school education, a physical is required and a series of interviews and tests continues the procedure. Training is required, using the Stackhouse School and other appropriate areas before and during the deputy's service years.

"This training is complex and technical, considering the state-of-the-art communications gear, sophisticated water-testing pollution kits, weapons, other field equipment and the increased enforcement powers with the other officers needing to know more general police code laws, court procedures and case processing."

"The bottom line," continues Smith, "is that our deputies need more training to do the job. Our selective process has become quite picky, matching some of the Marine Corps slogan—we need some of those good men and women, too."

And for the most part, deputies must pay their own way, although there are a few fringe benefits. Some deputies receive stipends for special duty service that could include lake and river patrol. This varies with the region, but deputies should be prepared to buy their uniforms, standard sidearm and other individual items of equipment.

Fish stocking

Volunteers and fish stocking come in two categories. There are those who assist with Fish Commission fish stocking of various species. The other volunteers usually are members of a cooperative nursery club, stocking their own fish.

In the first case, waterways conservation officers have a crew of dependable volunteer stockers. These people are advised of pre- and in-season trout stockings. They meet the stocking trucks at the fish culture stations, or at designated spots, and handle the nets to the water, carry the buckets to the stream, and in some cases, aid in float stocking.

These volunteers are not an official organization, but they seem to have an understanding with the WCOs and recognize the need for their services. These regulars are supported occasionally by people following the truck, who assist briefly in the stocking.

Some businesses excuse employees to assist with stocking, or they may even have a special group of people within the company assigned to the task.

Russ Gettig

"Such an outfit," says Smith, who is formerly an Armstrong County WCO, "was a group of employees from the Alcoa Research Center in my county. Bill Bossinger, a company staffer, was in charge and they all showed up on time whenever needed. They were a bunch of dedicated people—we were stocking a county stream one time and a train derailed and started to tumble down the bank—the Alcoa volunteers rescued the trout about to be stocked before literally jumping out of the stream to save themselves."

The other group of stockers, cooperative nursery people, do their own fish planting in approved waters with a stocking schedule on file with the Commission Cooperative Nursery Unit at Pleasant Gap. Ballpark figures show that some one million legal-sized trout plus sub-legal bass and walleye are stocked each year.

The larger clubs have their own special trucks with permanent aerators. On small units volunteers jury-rig aerators on metal drums to haul their trout. Not only do the co-ops move their own fish, but they do a considerable amount of float-boxing to spread out their fish. Most clubs have fish committees and within those are stocking crews.

Occasionally, the Fish Commission offers assistance. The Potter County Anglers, with large numbers of trout to dispense at one time, use a Commission stocking truck as a "mother truck" that off-loads to pickup trucks that meet it miles from the nursery.

The Bald Eagle club, Blair County, in the past did its stocking with a "mother nursery" rather than a truck. The Bald Eagle club had the room and water needed to raise a lot of trout. Smaller clubs in the area with no water source or limited funds contributed dollars or labor and materials. At stocking time, the pickups and their ingenious tanks and aerators would arrive at the nursery, pick up their share of trout and vanish into the surrounding mountains, stocking small streams along the way. As many as 50 pickups would be involved and over 200 volunteer sportsmen participated.

Cooperative nurseries

Cooperative nursery workers are probably the largest group of volunteers contributing services to the Fish Commission. Their efforts are also the most visible. They raise fish like trout, bass and walleye and they have raceways, ponds, dams and large signs identifying their properties.

The cooperative nursery program began modestly in the 1930s but got its real start in 1965 with 55 nurseries and 54 sponsors. Trout production that year was 199,940 legal-sized fish stocked. Volunteers from 34 counties were involved. It is hard to count the number of individuals participating, but the numbers were already impressive.

By 1970, there were 115 nurseries with 88 sponsoring volunteer clubs that stocked 608,246 legal-sized fish. Ten years later, there were 180 nurseries and 154 sponsoring clubs in 51 counties with 862,723 fish stocked. Peak stocking figures of more than one million fish were reached in 1987. Other figures have remained fairly constant during the last few years.

Most of these sportsmen built their own raceways, intake systems and holding ponds. Some structures were unique and others followed standard raceway plans provided by the Fish Commission. Once approved and built, the Commission Cooperative Nursery Unit staff gave the go-ahead for the volunteers to begin raising fish with technical help as needed. All fish were released into public waters.

Cooperative nursery sponsors must be organized sportsmen's groups and bear the entire cost of construction, maintenance, feeding and record-keeping. The Commission furnishes the fingerlings, technical aid, regional seminars and routine site visits, and sends help in emergency situations.

The sponsoring clubs vary from the cooperative nursery being its only interest, such as the Yellow Breeches Anglers, Cumberland County, to the multi-interest club such as the Mercersburg Sportsmen's Association, Franklin County.

The number of fish raised is another factor. Fewer fish suggest a smaller operation with fewer people involved. For example, a club in Crawford County stocked 600 legal-sized fish last year. Other clubs with larger facilities may get 45,000 or more fingerlings a year. Regardless, all clubs and volunteer members seem to have the same dedication to their projects.

Education & Information Corps

The Volunteer Education & Information Corps is a small but effective group that works under the direction of Steve Ulsh, Education Chief, Bureau of Education and Information. Much newer than Law Enforcement's group of DWCOs, the E & I unit was created in 1982 at the suggestion of executive director the late Ralph Abele. Ulsh was given the task of forming and formalizing the corps.

Its basic purpose is to supplement and assist the Commission staff and employees in educating and informing the public about the activities of the Fish Commission, fishing opportunities and skills, the need to protect, conserve and enhance the aquatic environment and improve the quality in the service offered to the public by the Commission.

In recent years the corps has had a roster that includes some 21 members, randomly scattered across the state. Qualifications include willingness to submit to a criminal history check through the State Police, be physically able to perform assigned duties, have a knowledge of fish, fishing and the aquatic environment, and be a resident of Pennsylvania. Most important is the volunteer's ability to communicate effectively, including a pleasant manner, in written and oral form.

A Volunteer E & I Corps member cannot be a full-time Commission employee, nor can the volunteer be a deputy waterways conservation officer, nor take any law enforcement action.

Much of the Volunteer E & I Corps work is with the public.

presenting programs, teaching fishing skills, stressing acid rain and other damages to the environment, and working at Commission booths at fairs and sport shows. With members reporting their efforts by June 19, 1990, there were 210 separate activities involving the first six months of 1990. Reported mileage for these assignments was 12,077 with 934 contact hours that did not include driving time. There were more than 23,000 people served in the process. By early December 1990, these figures had nearly doubled. This indicates the effort made by the Corps.

In addition to the public projects, many Volunteer E & I members serve on advisory committees, work on Commission publications, design tests and create displays for special purposes, and perform other non-public assignments.

Membership varies slightly from year to year but averages about 18 active members. Current volunteers represent a number of retired educators and management people. Some full-time teachers are active participants. There is a city policeman, a sheriff's law enforcement officer, a college student and other career people to complete the roster.

Adopt-a-Stream

The Fish Commission has been working hard to reclaim rivers, streams and lakes. So that the cleanup quickens its pace, the Commission in 1985 breathed new life into the Adopt-a-Stream Program. This program was created in 1974. It flourished and then slumped because of a lack of manpower.

This situation was reversed in 1985 when Ralph Abele, executive director, got it back on track. Currently the program is operated out of Bellefonte as a section of the Bureau of Property and Facilities Management.

Clubs and individuals interested in volunteering to save or improve a section of stream, a pond or lake must file an application listing water course, location, degree of adoption (there are three—each requires more effort), and other pertinent information.

Visits to the site, conferences and some physical assistance are available if the adoption is approved. In some cases, continuous visits to the site by Commission personnel may be required according to the specifics of the degree of adoption.

The program is successful and currently boasts 150 streams and 35 lakes sponsored by volunteer groups. "One problem," says Karl Lutz, Adopt-a-Stream Eastern Area coordinator, "is that we are overwhelmed with the number of applications currently on hand, and a waiting period may be required until a volunteer group's request is honored."

Most landowners, Commission staff and cooperators work hand in glove, having opened more than six miles of streams in 1990.

Water safety and water rescue instructors

A number of opportunities exist for volunteering in the Fish Commission Bureau of Boating. Cheryl Kimerline Hornung, special programs coordinator, says, "We have a need for instructors in several areas, including water safety and water rescue.

"Candidates for volunteer instructor posts should have knowledge, experience and enthusiasm for our program. These are initial criteria. Beyond these basics, instructors should believe in hands-on training and should not be afraid to get wet."

In more detail, a swimming and boating background is the first step to becoming an instructor. Second, the instructors should enjoy working with people. Third, these individuals should be highly motivated with personal goals and commitments in the field of boating and water safety.

In 1989, boating volunteers accumulated nearly 2,000 hours of service. Most of the hours were spent in instruction and demonstration.

Several volunteer instructors received awards and recognition for their services and skills. George Angstadt and Thomas Eckert were given 1989 Water Rescue awards from the Fish Commission for outstanding contributions in the promotion of the Pennsylvania Water Rescue Training Program.

Eckert also received the 1989 Regional National Water Safety Congress Award in recognition for his water safety and rescue training. Steve Ketterer, Harrisburg River Rescue, earned the 1989 Local National Water Safety Congress Award for his skills in water safety and rescue training.

"We have a small, hardy group of volunteer instructors and we're looking for more," says Hornung.

That is a survey of volunteerism as applied to the Pennsylvania Fish Commission. The more organized forms of that work are there. What is missing is the acknowledgement of the angler picking up someone else's trash, the small group of conservation school alumnae that helped pick trash out of the drawn-down Opossum Lake a couple of years ago. They and many like them also serve a voluntary service and their silent good deeds need to be noted here.

DO YOU WANT TO VOLUNTEER?

The Commission often receives requests from sportsmen and conservationists who want to help out in Commission volunteer programs. Here's how to get involved.

☛ **Deputy waterways conservation officers (DWCO).** A limited number of vacancies are available in some counties. If you're interested in becoming a DWCO, contact your county's regional manager at the Commission regional law enforcement headquarters. These offices are listed on page 56 of the *Summary of Fishing Regulations and Laws*.

☛ **Fish stocking.** Contact the nearest cooperative nursery in your area, sportsmen's club, or Commission regional law enforcement headquarters.

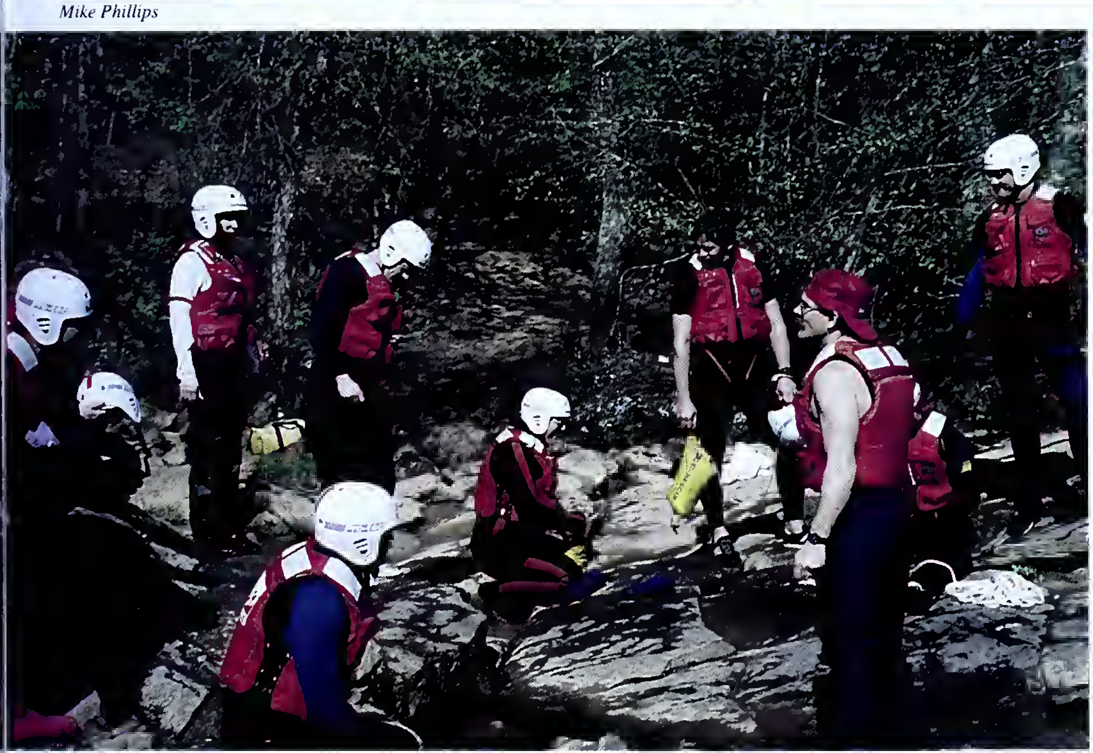
☛ **Cooperative nurseries.** Contact Cecil Houser, Chief, PA Fish Commission Cooperative Nursery Unit, 450 Robinson Lane, Bellefonte, PA 16823-9616. Phone: (814) 359-5172.

☛ **Volunteer Education & Information Corps.** Contact Steve Ulsh, Education Chief, PA Fish Commission Bureau of Education & Information, P.O. Box 1673, Harrisburg, PA 17105-1673. Phone: (717) 657-4518.

☛ **Adopt-a-Stream.** Program supervisors would consider volunteers to work on projects already initiated. Contact: Dave Houser, Chief, Adopt-A-Stream Section, PA Fish Commission, 450 Robinson Lane, Bellefonte, PA 16823-9616. Phone: (814) 359-5185. For a free copy of Adopt-a-Stream guidelines, send a business-sized stamped, self-addressed envelope with requests to Mr. Houser at the address above.

☛ **Water safety and water rescue instructors.** Obtain copies of the fact sheets on these two programs. With requests include a business-sized stamped, self-addressed envelope to: Cheryl Kimerline Hornung or Virgil Chambers, PA Fish Commission Bureau of Boating, P.O. Box 1673, Harrisburg, PA 17105-1673. Phone: (717) 657-4540.

Mike Phillips



Preston Colby

Volunteers provide valuable service to the Commission and to the state's anglers, boaters and conservationists. Most of these specialists possess expertise and training beyond the simple desire of wanting to help. To all Commission volunteers, thank you!

Russ Gettig

PA Fish Commission photo

Tracking Shad for Better Catches

by Dennis Scholl

photos by Joe Workosky

Nature's children are fond of proclaiming the arrival of spring with color and song, but there is one harbinger that ushers in the season without even the slightest bit of fanfare—the American shad.

Every year as winter's grip loosens, hundreds of thousands of these sleek, silver fish silently gather in chilly Delaware Bay in preparation of their annual spawning journey north. They congregate like a vast army, awaiting a signal that will send them into a river their ancestors inhabited long before man arrived.

Most are preparing for their first ascent; a handful are returning for a second, or even a third. For the veterans, the river's twists and turns and churning currents harbor a certain familiarity. But to the first-timers, the Delaware is a 330-mile test course whose only guiding beacon is a faint scent that somehow ties them to their past.

How do they know when to begin their journey, which path to take, how far to swim in a day, or where to spawn? Instinct provides the answers, of course, answers that not only determine the timetable and course of the shad, but the habits of fishermen who follow them as well.

Consider how you'd find shad if there were no daily fishing reports, no crowds to follow, no rumors to hear. What if it were up to you alone to pick out a time and place to fish—and be successful? Would you be able?

Maybe not, but you wouldn't be alone. Most other fishermen would come home empty-handed, too, simply because they never take time to analyze the fish, to learn its habits, its preferences. They take the easy way out and subscribe to the party line.

Total picture

A competent shad fisherman has a grasp of the total picture. He pays attention to weather reports and river conditions and adapts his fishing techniques as nature dictates. He maintains a detailed account of his fishing experiences so he can remember from year-to-year how shad react to influences such as abnormally warm springs, sudden changes in water temperature or flood conditions. Over the years that knowledge enables him to pick and choose his trips.

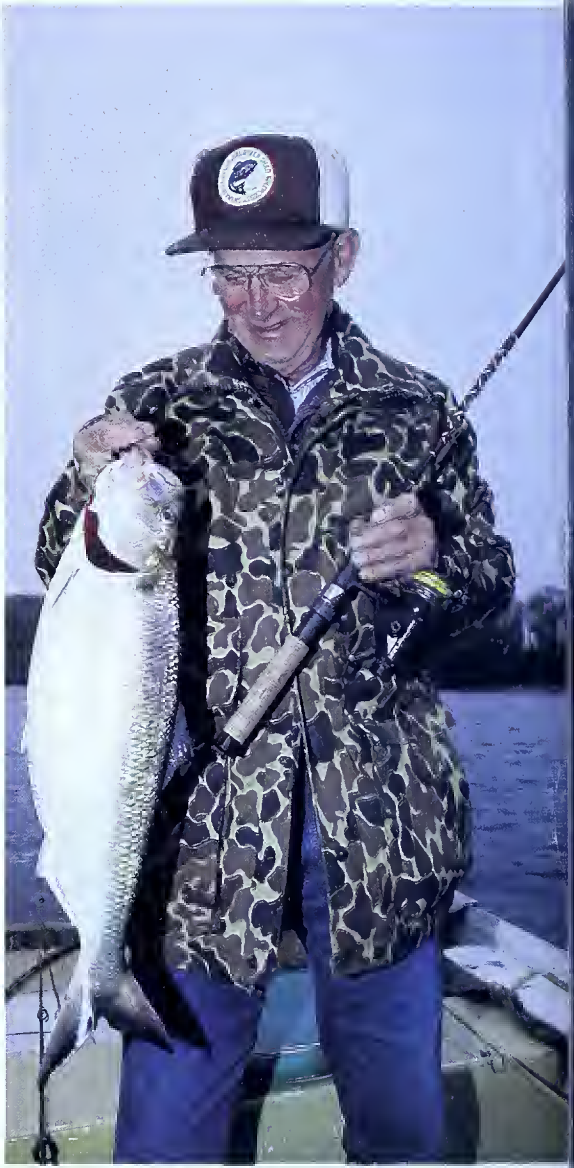
The best place to begin a course in shad education is off the coast of southern Florida—in January, when a new shad season is just getting under way. You don't actually have to go south, but you should know that is where your shad spend Christmas and New Year's Day while you're battling frosty winds and slippery roads.

Isotherms

They are there because water temperature dictates it, just as it dictates most everything else in their lives—when they enter a river system, how far they swim in a day, and when they spawn. In the ocean, shad follow temperature-specific bands of water called isotherms that are approximately 53 to 55 degrees. In January, these isotherms are off the coast of southern Florida. Shad from every river system along the eastern seaboard hold in them, a huge continuum of fish ranging from youngsters of less than one year to repeat spawners that may be seven or eight. Some are ready to spawn, some are not. Regardless, they travel as one continuous stream of fish, meandering through the ocean's depths until something attracts them toward the coastline.

That something is a chemical mixture that is inherent to their parent river, an attractant that is imprinted in the shad when they are needle-thin, fingernail-long fry. Be it the Delaware, Virginia's Rappahannock or the Connecticut, every river has its own peculiar chemical makeup, something a shad never forgets, a scent that's as identifiable as the smell of mom's fresh-baked bread is to you and me.

The most successful shad anglers grasp the whole picture. They pay attention to weather reports and river conditions, and they adapt their fishing techniques as nature dictates.



Finding this scent takes time, as many as five or six months for shad born in Canadian streams. Through a process of trial-and-error, the fish swim into embayments along the East Coast and try to identify the scent (and to some extent, the current patterns) that was familiar to them years ago. They may penetrate several river systems before detecting it. If they don't identify the river as their own, they exit and continue north along the coast, entering more systems until the attraction becomes too strong to resist. Once they've homed in, they remain and begin a period of acclimation.

Physiological change

Shad born in the Delaware River begin entering Delaware Bay in late February,

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although most arrive in mid-March. The water is colder than in the South, in the low 40s, but not cold enough to cause harm. The fish may spend a few weeks meandering back and forth in the bay adapting to the influx of fresh water. They undergo a physiological change called an osmoregulatory transition. This change allows them to enter fresh water without suffering dehydration or oversaturation of water in the tissues.

The process is complete for some shad in early March, and despite water that is still too cold for optimum movement, these fish enter the brackish water of the lower river, slowly plying past the oil refineries at Delaware City and the shipyards of Philadelphia. They travel past Camden and Chester and Wilmington before finally reaching the nontidal river at Trenton. Early fish may get there before March 15, but most arrive around the middle of April when water temperatures rise to levels more suitable for migration.

Many people assume that once shad are in fresh water, they steam upriver at breakneck speed, never stopping until they reach their spawning grounds. But that's not true. Given normal river flow and prime temperature regimes (53 to 55 degrees, just like in the ocean), a shad covers an average of eight to 14 miles a day, although some may swim farther, perhaps up to 20 miles in extreme cases. Those are important numbers to log into your data bank. Here's why:

Suppose you latched into a good school of shad in Easton late one afternoon, when river conditions (temperature, water flow) were prime for migration. Considering what you knew of a shad's daily movements, you probably could pinpoint a fishing spot about 10 miles upriver and stand a good chance of running into that same school the next day, at about the same time.

In my nomadic days, I did just that with a fair amount of success, plotting the next day's fishing based on the previous day's success. I'd pull out my river maps (which are marked in river miles, not road miles) and find the next fishable location approximately 10 river miles upstream. It was fun and there was always a sense of anticipation. Sometimes I thought it worked, sometimes not.

By the same token, you can be successful by staying at the same spot, because once the river is prime for migration, fish are on the move all the time. The one million or so shad that spawn in the Delaware each spring don't leave Delaware Bay en masse; they exit in pods that may vary from 10 to 1,000 or more fish. So once your favorite spot begins producing, good fishing should continue for at least three weeks or longer, although in varying degrees of intensity.

Shad cover about eight to 14 miles a day in normal river conditions. This angler tracked the shad some 40 miles upriver and hit it right at this Northampton County spot.

The peak

The migration peak is the segment where roes and bucks are almost equal in number. It lasts anywhere from four days to one week in a given location, depending on the overall size of the run. It can be identified, but you must monitor the river daily, either personally or through a reliable source.

To keep abreast of its progress, you must be able to determine when the numbers are decreasing. Then it's a matter of heading upriver about five to seven days' traveling as the shad swim. That way you stand a good chance of getting back into the fish you enjoyed down river.

This, of course, is contingent on prime river conditions, which in a "normal" year usually occur somewhere from April 25 through May 5, but rarely for more than a five-day stretch. There are simply too many environmental influences that can throw a normal river out of whack. Cold snaps and resultant drops in water temperature slow a shad's metabolism and cause them to swim a fraction of the distance they do during prime time, or shut them down altogether.

High, turbid water has the same effect and can even push the fish down river several miles or more. That happened during the 1989 run when more than four inches of rain raised the Delaware near flood stage in early May.

When this happens, you can kiss goodbye your theory regarding the peak of the run. The schools break up and it's impossible for you or anyone else to fish. The only way to discover what happened to the shad is to wait for the river to recede to a fishable level and begin hammering away again. But don't hope to find the fish you pinpointed before; it will never happen.

Spawning

Warm, low water and the way shad react to it are the other side of the coin. Once water temperatures reach 61 or 62 degrees, the shad's sexual glands mature and the fish are overridden with the urge to procreate. They halt their upriver migration wherever they happen to be. For fish that got an early start out of Delaware Bay, spawning may take place in the Delaware's East Branch above Hancock, NY. Late runners, on the other hand, may spawn in tributaries along the estuary.

Spawning behavior is far different from migrational habits. The fish become inactive during the day, staying in deeper pools until an hour or so before dusk when river temperatures are at their maximum. Then everything breaks loose.

You may see fish that appear to be on a feeding frenzy, cutting dorsal fins through the surface, or circling in the tail end of a pool. Fishing is often excellent at this time, but as the sky darkens, everything shuts down as though turned off by a spigot. The shad begin to chase one another in the shallows and lose sight of anything else. If you sit on the Delaware's banks during the first hour of nightfall, you'll be totally amazed at the noise these fish generate as they splash and cavort. Spawning extends over several nights.

Warm water releases at power plants along the river also affect the shad early in the season. Anglers at the Pennsylvania Power and Light plant at Martins Creek and the Metropolitan Edison plant at Portland usually catch fish well before fishermen in the lower river catch them consistently. That's because the shad are drawn to, and remain in, the warm water that's discharged from the plants. They may not strike at other locations because the water is too cold and their metabolism is slow, but once they enter the water around the discharge pipes, metabolism picks up and anglers cash in.

The length of time they remain depends on the water temperature of the river. If it goes up a degree or two, they'll leave the power plant effluents and continue their migration. If it cools, they may stay longer. It's not a natural situation, but it's certainly fruitful.

Light-sensitive fish

Temperature is the overriding factor determining a shad's migrational habits, but it's not the only factor. Shad are also light-sensitive, which governs to a large extent where they swim. Generally, shad are channel runners, following the slope of the channel as it cuts through the river bed. If they encounter a section of river that's wide and shallow, they'll deviate from their normal pattern, but will head right back into the channel as soon as they detect it.

But if they're light-sensitive, how do they react when night falls? No one knows for certain, but most people believe shad enter and remain in pools overnight before breaking camp and continuing upriver the next morning. That's just a theory, but veteran anglers know that fishing often is very good at the head of a pool from dawn until about 8 a.m. Then it slacks off until another school of fish arrives. Conversely, fishing at the tail end of a pool is often excellent very late in the day, when it seems shad settle into an area for the night.

And like other anadromous fish, shad are strong swimmers, but not foolish enough to tackle the swiftest portion of the river every inch of the way. They swim along the flanks of rapids, or rest in slack areas behind bridge abutments and large boulders. Where there are islands in the river, particularly large islands, they congregate where the two "streams" that flow around the island converge, before deciding which side of the island to ascend.

In high water, shad shy away from the main flow and stabilize themselves along the shoreline, either holding or moving upriver slowly. It's not necessary to cancel a fishing trip if the river is high and turbid. Just pay attention to the shoreline, particularly small coves that cut in along the bank. And if the Delaware is murky after a hard rain but a tributary is running clear, fish the confluence of the two, favoring the clear water of the tributary. Shad often hold there until the Delaware clears to their liking.

The motto: Learn what's normal, but be ready for the abnormal, too. It's great to have a plan when the river is in prime shape, but that doesn't happen often. During the past three Delaware River shad seasons, there were scarcely more than three "normal" weeks.

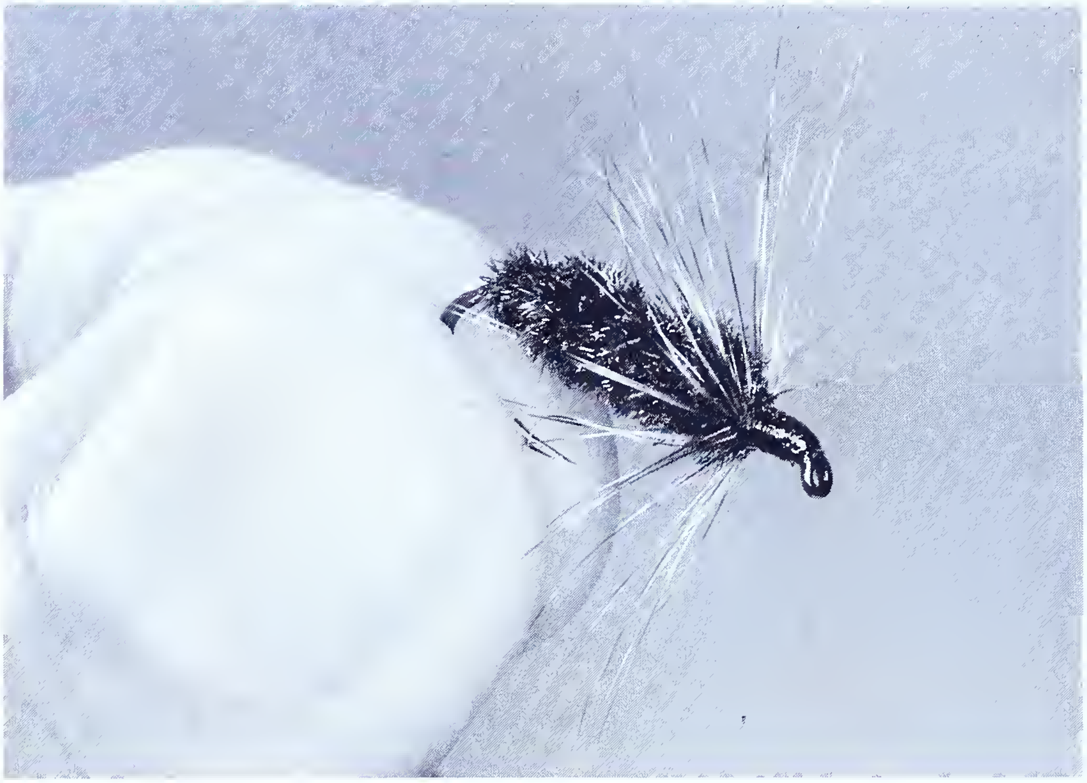
Last year is a fresh example. Commercial fisherman Fred Lewis, of Lambertville, NJ (opposite New Hope, Bucks County), caught his first shad on St. Patrick's Day, March 17. That was unusual, but so was the early spring weather. Air temperatures unexpectedly shot into the 80s for several days, and the Delaware, which was running lower than normal because of a lack of snowmelt, warmed accordingly. Fish were attracted into the river 10 days to two weeks early and the run was under way before anyone was ready.

But then Nature regained her senses. Cold weather returned and continued through the middle of April. The shad slowed considerably and eventually the season ran pretty much according to form, although it was set on its ear a few times in May by heavy rains that left the Delaware high and muddy. It was an odd season, to say the least—just like the year before it.

That's why it's important to understand the shad, their habits, and how they react to environmental change. Subscribe to the party line and you'll probably catch fish, but you'll never know why. Do your own research and you'll know exactly what's happening every inch of the way.

The Venerable Gray Hackle Peacock

by Chauncy K. Lively photos by the author

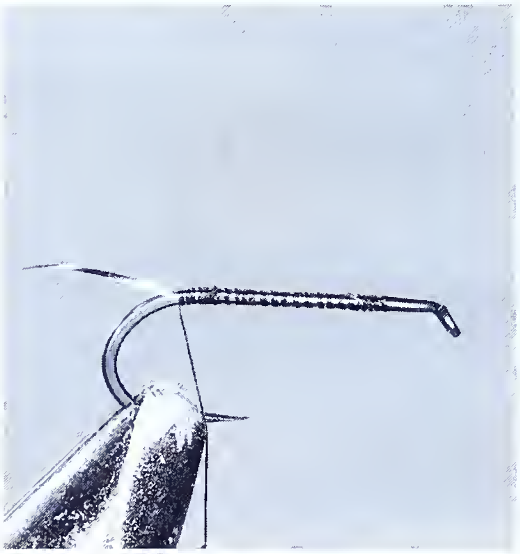


The use of peacock herl for fly bodies goes back several hundred years. It is used in such wet fly patterns as the Coachman, Leadwing Coachman, Royal Coachman, Alder, Picket Pin and Gray Hackle Peacock. Herls are the thin appendages extending laterally from the stalk of a peacock tail feather. They are located below the "eye" of the feather and are covered with fine, short hairs showing a green or bronze iridescence.

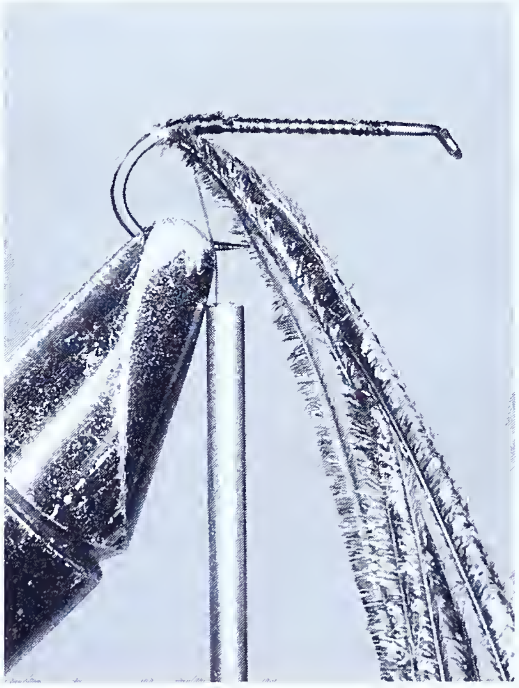
Some fly tyers put a premium on bronze-hued peacock herls and settle for nothing less. Most herls appear greenish when viewed from certain angles, but bronze herls may be identified by bending them and viewing them against a light. If they consistently appear bronze without showing any green, regardless of the viewing angle, they are genuine bronze herls.

I'm less fussy about herl color. I've had good success with greenish herl as well. My chief concern is with the herl's density. A dense herl produces a fuller body when wound and that's a desirable aim.

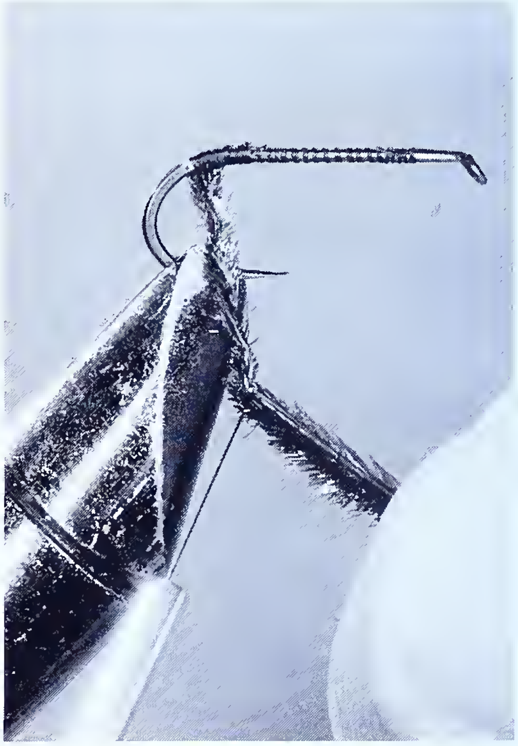
The Gray Hackle Peacock (also known



1 *Clamp a hook in the vise and pull a short length of thread from the bobbin's barrel. Hold the end of the thread in your left hand and place it diagonally against the near side of the shank about an eighth-inch behind the eye. Manipulating the bobbin with the right hand, wind over the diagonal thread with close turns, moving from right to left. After four turns you may release the thread in your left hand. Maintaining a light tension on the working thread, trim off the excess short end. Then wind the thread in spaced turns to the hook's bend. At the bend tie in a short length of tinsel or Flashabou with three of four turns.*



2 *Hold the bobbin out of the way and make a tag by wrapping the tinsel/Flashabou four overlapping turns from right to left around the hook at the top of the bend. Then reverse directions and wrap four overlapping turns from left to right over the previous wraps. Tie off with three turns of thread and trim off the excess tinsel. Then coat the tag with lacquer. Select four peacock herls and tie them in by their tips with three turns at the forward end of the tag. Trim the excess herl tips.*



3 *With the herls hanging below the shank, hold them together as you wrap the thread in a spiral around them for a length of three or four inches.*

simply as the Gray Hackle) has been a favorite wet fly with many famous fly fishermen over the years. James Leisenring, known as "Big Jim" to his friends, was a toolmaker from Allentown who developed wet fly fishing into an art form. He regularly fished the Brodhead in northeastern Pennsylvania and he became a legend on these waters. In his book *The Art of Tying the Wet Fly*, Leisenring names the Gray Hackle and Red Hackle (a fly similar to the Gray Hackle except for its brown hackle) as the most effective general-purpose flies. Curiously, his Gray Hackle pattern used a yellow or creamy-white furnace hackle instead of a gray hackle. However, if we can assume that his "yellow or creamy-white furnace hackle" is what most tyers now refer to as "badger" hackle, its substitution for gray or grizzly is often made by fly dressers.

If peacock herl has a fault it is its lack of durability. When wound around the hook shank to form a body, the herl is susceptible to breaking unless a strengthening technique is used. Without some kind of buttressing, the sharp teeth of a trout can easily sever the wound herl, allowing it to unwind like a broken watch spring. Happily, there are ways to reinforce the material that greatly increase its sturdiness.

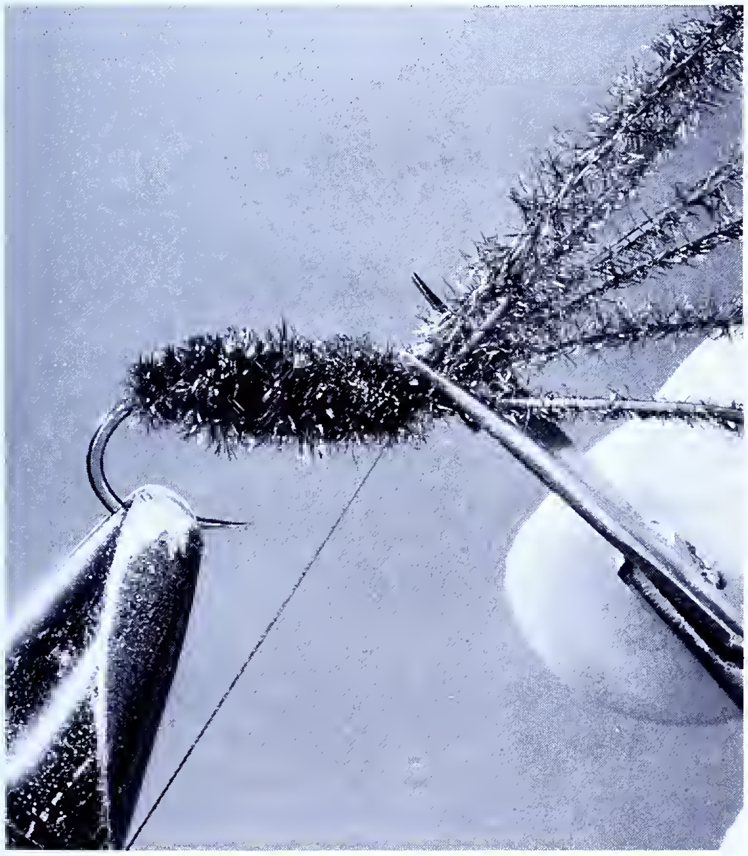
Counterwinding a tinsel ribbing over the wound herl is a common solution, but it has some minor drawbacks. Unless the tinsel is relatively wide, it becomes buried in the herl and is often unseen on the finished fly. The wound tinsel also makes a depression around the herl, detracting from body fullness. My favorite method of toughening these bodies is to spiral-wrap the herls with the tying thread, forming a chenille-like twist, and winding it forward around the shank.

Herls may be obtained by purchasing whole peacock tail feathers and extracting the individual herls as needed. However, many suppliers offer strung herls—a method of packaging in which several hundred herls are bunched and bound together by string woven around the base ends of the herls. Withdrawing herls as required is simple and a typical bunch supplies the average fly tyer for many years. It's a convenient and economical way to go.

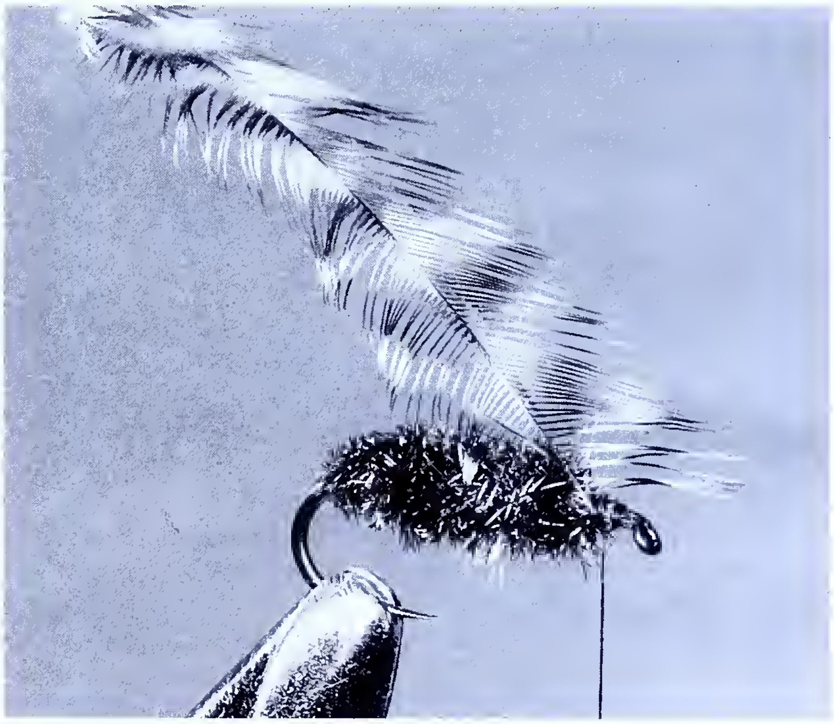
The Gray Hackle Peacock has been interpreted differently by various fly tyers, as have other standard patterns. Some dress the pattern with tails of scarlet hackle fibers. Others add a short tail of red yarn. Still others omit a tail altogether and dress a short tag of gold or silver tinsel. The latter dressing is my own preference because the absence of tails permits a more positive penetration of the surface film when cast—an important consideration in any wet fly.

In addition to being a fine fish-getter, the Gray Hackle Peacock is easy to tie. In fact, it's a pattern even the first-time novice can tie sufficiently well to catch trout right away. Just follow the detailed instructions and refer to the photographs.

Dressing: Gray Hackle Peacock
Hook: Size 10 or 12 Mustad 7984A or equivalent.
Thread: 6/0 black prewaxed (mounted in a thread bobbin).
Tag: Three-inch length of fine silver tinsel or pearl Flashabou.
Body: Peacock herl.
Hackle: Grizzly (soft and webby).



4 *Hold the thread and herl firmly between the right thumb and forefinger at the end of the wrap. Then wrap toward the eye in close turns to the original tie-in point behind the eye. If the body is not full enough to satisfy you, wind back and forth over previous winds to build up body thickness. At the original tie-in, unwind the thread from the unused herl and tie off the body with three turns. Trim the excess herls as shown.*



5 *Select a grizzly hackle with fibers about as long as the distance between the hook's eye and point. Hold the hackle by its tip and with the other hand stroke downward along the rib, causing the fibers to stand out at right angles. Then tie in the hackle tip at the forward end of the body with three turns and trim the excess hackle tip. Grasp the hackle butt with your fingers (or with hackle pliers) and wind three close turns. Tie off the hackle with three turns of the thread and trim the excess hackle butt. With the left hand, stroke the hackle back over the body while you wind the thread tightly against the base of the wound hackle. Then wind the thread smoothly to form a neat head and finish with several half-hitches. Trim the excess thread and lacquer the head.*

Time-Proven Lessons for Catching Trout with Bait

by Jeff Mulhollem

Despite millions of less-than-wary hatchery trout dumped into waters across the Commonwealth every spring, most fishermen apparently never get to touch them. That old adage about 10 percent of the fishermen catching 90 percent of the fish is true, at least for trout fishing in Pennsylvania.

It is obvious that most anglers simply don't know how to go about catching trout. In my wanderings along trout streams across the state, I have seen this to be true. I can offer a few suggestions for novices that can help you get out of that high percentage of non-catchers this spring.

Concentrate on baitfishing in streams, because that is the traditional method of trout fishing, the way most people seem to prefer fishing.

I was taught to fish for trout by one of the old-school bait fishermen—you know the ones. They used inexpensive fly rods, level fly lines, a few feet of monofilament for a leader, and a cheap automatic fly reel to maneuver their worms or minnows in small streams.

They were the best. The guy who taught me was aptly named "Buck" from Altoona. They all had names like Duke, Butch or Bubba, and they could take a limit from a mall parking lot. Buck—even his sons called him that—was amazing, hooking trout in the currents of his beloved Spring Creek near Bellefonte or Penns Creek near Poe Valley State Park after other anglers had fished unsuccessfully.

So the first thing you have to do to catch more trout is come up with a manly nickname for yourself ... No, seriously, there is much we can learn from these oldtimers. There are only a few of them left and I fear the skill of baitfishing "the right way" may be disappearing. Otherwise, why are so many anglers fishless?

Here are some of the tenets I learned from Buck.

☐ **Read the water and have the patience to fish it right.** So often I see fishermen working only the pools, where all the guys congregate, and ignoring everything in between.

Buck would tell you it's those riffles and ignored pocket water that really produce, especially after the first few days of the season. And the oldtimers would take the time to try every pocket, patiently covering the stream.

They knew where the trout should be, and you'll have to learn, too. They're in the breaks of current around rocks, logs and debris. At the lips of pools, along rock ledges and in the fast water they sometimes hunt for food. Successful bait fishermen don't bother much with the slack water that I see so many anglers still fishing these days.

☐ **Keep it moving.** In fact, the oldtimers never still-fished. They kept the bait moving with the current, always experimenting with the number of splitshot to get the proper weight for a perfect drift through the water they were fishing. They knew that trout are efficient feeders. Seldom do trout look downstream because the current delivers most of their food.

☐ **Use the right bait.** Buck used mostly red worms, but he believed in a particular variety that appears yellowish. He dug those from what are called the filter beds where sludge from one of Altoona's sewage treatment plants is dumped to dry. I never liked digging worms in that environment with him, although the spade work was easy. But, boy, did those worms take fish, especially after a rain. Buck cleaned up with them.

At other times of the year we rigged minnows with a needle, attaching a double or treble hook to a monofilament loop that we threaded through the little fish's vents. Working "minnies" rigged like that through riffles in productive streams you have all heard of, like Kettle Creek, the Little Juniata River or Pine Creek, may be the most deadly method known for taking big trout. Guys like Buck made it look easy.

The oldtimers never bought bait. They knew where to dig worms or nightcrawlers. But more importantly, they knew where and how to seine the minnows, crayfish and hellgrammites that are so effective. They wouldn't admit it, but I think they enjoyed collecting bait. I even met one fellow from a small town in Cambria County who raises and keeps his own supply of crickets for trout fishing.

I remember as a young boy being taken to a little mountain creek full of brook trout in Centre County by a friend of my father's who assured me we didn't need to carry bait. All we needed to bring, he said, were some size 14 light-wire hooks and splitshot.

I'll never forget all the stickworms (caddis larvae) he showed me in the stream's eddies, and how those eight-inch trout gobbled them up. I think most anglers today haven't been shown things like that and I don't know why, but they're important for fish-catching.

☐ **Use the right tackle.** In my fishing travels, I see many anglers using hooks that are way too big for trout. I never used anything larger than a size 12 with bait. And heavy lines! I ran into one poor fellow last spring on Little Pine Creek in Lycoming County who had 20-pound test on his spinning reel.

I always use six-pound-test monofilament for baitfishing. Leave the four-pound test and ultralight outfits for the experts. With line that light you'll lose fish, lures and bait too often, especially if you don't tie your knots carefully. And a little longer rod helps you set the hook and catch more fish. I recommend a light to medium spinning outfit for baitfishing on streams for trout, unless I can talk you into using a fly rod like the oldtimers.

☐ **Know when and where to fish.** Successful trout fishermen are often at the right place at the right time. They make their own luck. You can learn what goes into a prudent decision about when and where to fish. It will help you catch fish, believe me.

☐ **Know which streams are stocked when.** I am not at all advocating following the hatchery trucks. In fact, when I know

Read the water and have the patience to fish it right. Riffles and ignored pocket water really produce, especially after the first few days of the season.

Mike Sawyers

a stream has been stocked, I stay away for a few days to let the crowds dissipate. The Great White Fleet seems to attract people with bad manners.

Did I tell you that the oldtimers almost invariably had good manners? Well, they did, and do. But there is no room here to get into angling ethics. Just use your manners astream! There are more important things in life than catching fish (well, maybe not many, come to think of it).

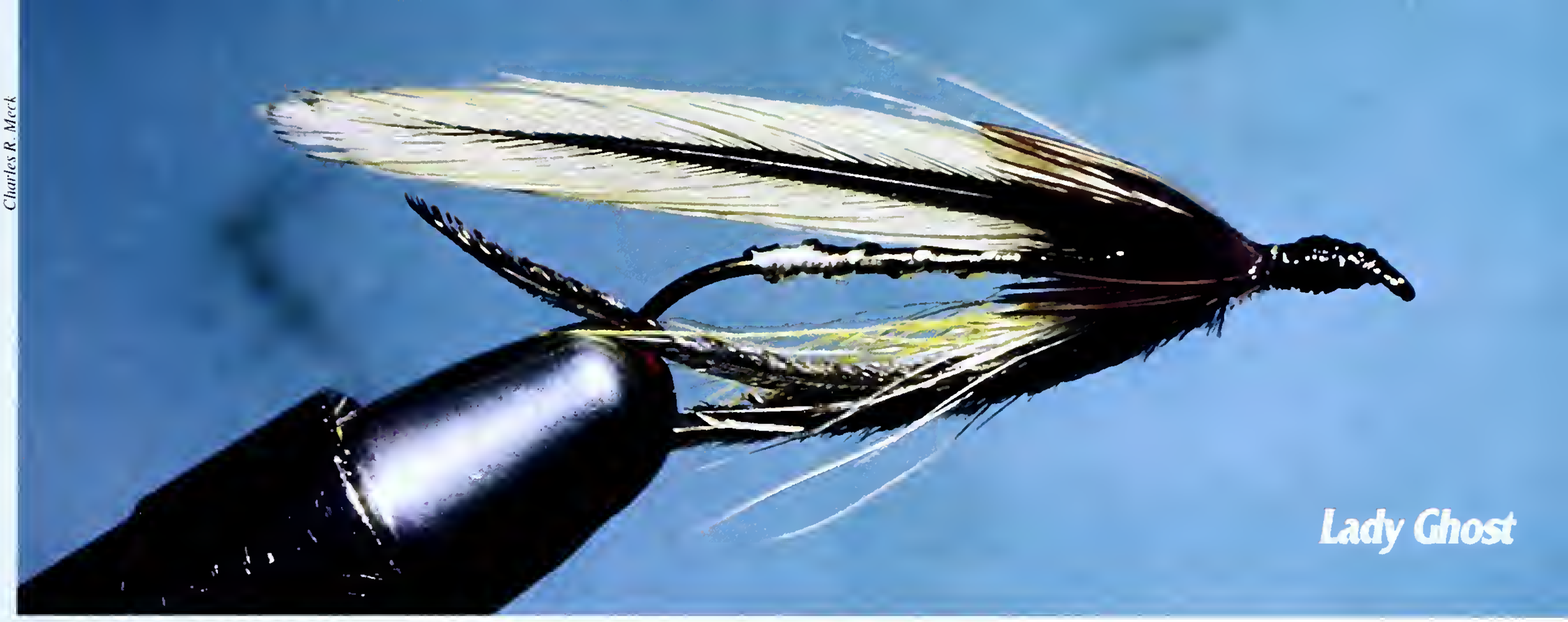
☐ **Know which streams you have a chance at catching fish in when the water is high, and which ones to stay away from after prolonged rains.** For example, in my area, Yellow Creek in Bedford County is a wonderful limestone-influenced trout fishery. But it muddies up quickly because of all the agricultural disturbance in its watershed. The stream runs through gently rolling farmland. When it has rained a lot and I want to fish, I head for the mountains, to a few small freestone wild trout creeks the Fish Commission calls Class A waters. They are the last to get muddy, and I think they fish better slightly high and off-color because the trout can't see you as easily.

When it has been hot and dry for a month or so, I stay away from the little freestone brooks, favoring instead bigger waters where trout won't be so spooky. You should, too, unless you want to stay low, crawl around and work hard to catch wary fish. Wild trout, even stocked trout that have been in the stream for a few months, are a challenge in this kind of environment when waters get low and clear.

There is one other thing we can learn from the oldtimers. But it is something we know now we should do just the opposite from them. Release some trout! Buck killed every trout I saw him touch. It was what he was taught, I'm sure, probably part of the mentality of living through the Great Depression.

Buck, and others like him, never wasted what they caught. But you should be more enlightened, if you get good at catching trout. Put a few back, especially if they are wild fish, a valuable resource deserving better than to end up in somebody's frying pan.

I'm not contending there is anything wrong with eating hatchery trout—I'll be creeling a few rainbows I'm sure for early season dinners. But never take more than you really need.



Muddlers, Buggers, Weenies and Ghosts

by Charles R. Meck

Where will you begin your trout fishing season this April and what will you use? If you're like a lot of other anglers in the Commonwealth, you've probably developed a regimen. You'll travel to the same pool on the same stream, fish with the same group of friends, use the same type of bait, and grouse about the same lack of success as last year. You'll probably fish alongside many of the same anglers who generate a tradition of opening day on your favorite stream or river.

My son, Bryan Meck, Mel Neidig and I have traveled to the same stretch of a central Pennsylvania stream for 15 straight opening days. With us and many other anglers, fear of the unknown prevents us from trying new spots and new techniques.

Just upstream from where we fish we always see the same group from Butler, and just below us three or four anglers from the Altoona area regularly attend on opening day. After a few years everyone surrounding the heavily stocked pool knows most of the other anglers.

Just before the opening cast a few years ago, one of the Altoona anglers yelled to me to find out what I was using to start off the season.

"Muddlers, buggers, weenies, and ghosts," I yelled upstream.

He looked at me skeptically and never said another word. I'm certain he thought I was using some weird lure. I actually referred to four productive cold-weather streamer patterns—either that or he looked with ridicule at anyone using streamers in this cold water.

Like Rodney Dangerfield, streamers suffer from a lack of respect. Yet, tied on the line of an informed angler, streamers become a productive weapon in the arsenal of lures and baits.

On those opening days, a few minutes before 8 a.m., the onslaught begins—dozens of lines enter the water simultaneously to announce a brand new trout season. Half these lines have salmon eggs attached to the hooks, the other half have a variety of baits from worms and minnows to spinners. Seldom do you see anyone using artificials like streamers or nymphs.

With few exceptions, on each early season trip I also refuse to change my tactics. On only one of those opening days did we encounter a fishable hatch. That Hendrickson hatch lasted for four hours one opening day. Some 40 trout on opening day on a Hendrickson dry fly? That sure broke a long-standing early season record for the most trout caught on a dry fly.

Other than that unusually warm spring opening day with the Hendrickson hatch, I habitually start off with a weighted dark-olive-bodied Wooly Bugger. If I don't have any strikes within a half-hour, I switch to a Lady Ghost, a Muddler Minnow or the Green Weenie pattern.

With this assortment you have a dark (Wooly Bugger), almost white (Lady Ghost), green (Green Weenie) and a tan (Muddler Minnow) streamer. All four streamers fished near the bottom are deadly on the normal coldwater opening-day and early season episodes. As the water temperature warms the first few weeks of the season, all four can be fished up off the bottom.

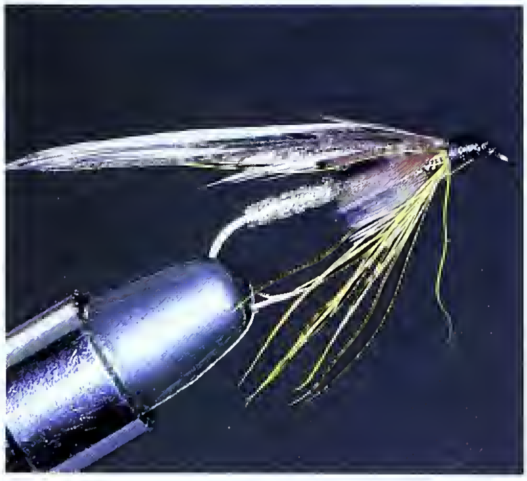
The Wooly Bugger, Muddler Minnow, Lady Ghost and Green Weenie have saved me from some frustrating early season coldwater fishing trips. As far as I'm concerned, these four streamer-type early season patterns work in almost every situation.

What are streamers? What they are to me might be wet flies or nymphs to you. Don Roberts wrote an article entitled "Strymphs." Roberts refers to patterns that are commonly regarded as streamers but could easily be called nymphs—thus, the word "strymph." Among his strymph patterns he includes the Muddler and Wooly Bugger. The Green Weenie could also be placed in that category.

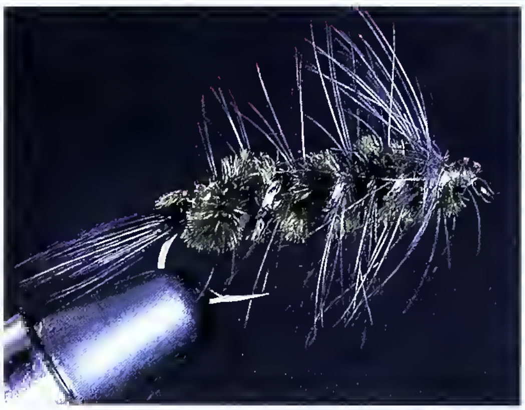
What's the difference between a streamer and a bucktail? Bates, in *Streamer Fly Tying and Fishing*, describes the bucktail as "a predominantly hair-winged fly that is intended to imitate baitfish." He defines the streamer as "a predominantly feathered wing that is intended to imitate baitfish." I often refer to a pattern or patterns as streamers when I'm actually talking about a nymph, strymph or something else.

Wooly Bugger

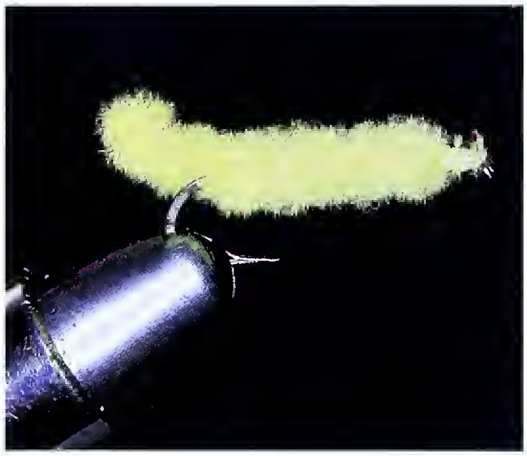
Don't ask me why I start the season off with the Wooly Bugger. It's just a habit protracted by years of success to announce every new season with this pattern.



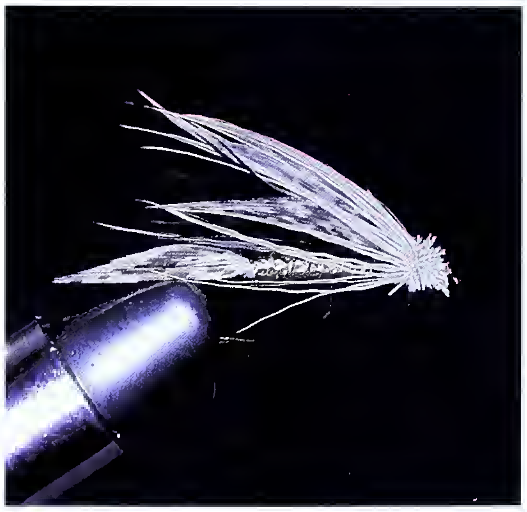
Lady Ghost



Dark-olive Wooly Bugger



Green Weenie



Muddler Minnow

The Wooly Bugger is an updated version of the older Wooly Worm. I usually tie it with a dark-olive chenille body, black palmered saddle hackle and a black marabou tail. Substitute grizzly hackle for black on some of your patterns and use this variation if the black-hackled pattern doesn't work. Rib a few Wooly Buggers with medium silver tinsel, too. For high-water early season trips, I wind 10 to 20 turns of weight around the hook to keep the artificial near the bottom.

Don't overlook the Wooly Bugger during the summer and fall on trips after a heavy rain. On many Commonwealth streams that run high in the summer, I resort to dabbling a Wooly Bugger in eddies and backwaters away from the fast flow. This pattern and technique have often saved me from a barren day. This latter technique works especially well on hundreds of productive small streams in the Commonwealth after heavy rains.

Muddler Minnow

Lloyd Williams, Dick Mills and I added the Muddler Minnow to our restricted list of early season patterns more than 20 years ago. All three of us used the deer-hair pattern successfully on Bowman's Creek near Tunkhannock early in the season. I've even seen Lloyd catch a few suckers on the bottom with a Muddler.

The Muddler copies many of the sculpin minnows common to Pennsylvania waters. It's a favorite April pattern of many anglers. Later in the season you can grease up some unweighted Muddlers and use them to copy grasshoppers.

Lady Ghost

The Lady Ghost has been a favorite of mine for more than 20 years. In fact, I used the pattern for two years before I knew the correct name for it. I first used the streamer on the Little Lehigh River near Allentown. Nothing Dick Mills, Don Mills or I used that cold March day produced a strike. Wooly Worms and bucktails like the Mickey Finn and the Black Nose Dace didn't catch trout that morning. Don Mills was the first to try the Lady Ghost, and he had almost immediate success with it. One trout after another hit that pattern. Soon Dick and I were begging Don for Lady Ghosts. We had almost the same immediate success with the streamer.

photos- Charles R. Meck

That initial success on the Little Lehigh was not a fluke, for the Lady Ghost has been productive on many streams and rivers in all regions of the Commonwealth ever since.

Green Weenie

What's a Green Weenie, you ask? It's nothing more than a piece of chartreuse chenille tied on a streamer hook. Many refute the idea that the Green Weenie is a streamer. They class it as a wet fly or nymph. I first saw Ken Igo and Tim Shaffer of Latrobe use this odd-looking excuse for a trout pattern on the Loyalhanna in late March several years ago. Those two anglers caught more than 25 trout while not one of seven other frustrated fly fishermen nearby caught one. I immediately became a believer in the Green Weenie after I witnessed their trout-catching techniques on the Loyalhanna.

George Harvey and I use the Green Inchworm or Green Weenie many times in spring and it has not let us down. George created the first green worm pattern back in the 1930s. He had immediate success with the pattern on Fisherman's Paradise. George's first patterns caught so many trout that they became an immediate fad on Spring Creek. I've seen streambred brown trout pick up the pattern off the bottom and run with it.

Try this hot pattern on your next early season trip. Alter the float from a dead drift to a twitching one and vary the depth from the bottom to the surface.

Strategies with streamers

Have you ever tried to toss a streamer with several splitshot across your favorite stream? There's nothing less graceful. Even worse is to try to use a roll cast. I add weight to the shank of the hook before I tie the pattern. That makes it easier to cast.

If the water temperature is about 40 degrees or lower, I fish streamers on a dead drift near the bottom with just an occasional twitch. Trout lack the energy to chase a pattern very far when the water temperature is that cold. On several opening days I've had seven strikes on the first seven casts when I fished the streamer near the bottom. When these four patterns produce, Bryan and I catch trout—often plenty of them.

If you encounter water temperatures near 50 degrees and you don't get many strikes near the bottom, fish the four patterns up off the bottom with a dead drift. If that doesn't work, twitch the pattern slowly when it makes its swing. Watch the swing, or arc—that's when you'll get the bulk of your strikes and miss the majority of trout.

On those cold, spring fishing trips so often characterized by high runoff water, cast the artificial slightly upstream and let it drift naturally with the flow downstream. If this dead drift doesn't produce, I impart motion to the artificial. Either the dead drift or a slight jerking motion produced by stripping the line usually works. Motion can be critical in coaxing trout to strike. Vary the motion of the streamer from slow to rapid, and if this doesn't work, use a dead drift.

I said earlier that you should vary the depth with streamer-type patterns. No strikes near the bottom? Then work the streamer (or nymph or wet fly) toward the surface. Earlier I suggested that you add lead wire to the body of your streamer to keep it near the bottom. By varying the number of turns of wire from pattern to pattern, you have some that sink quickly and others that tend to stay near the surface.

Fish the streamer on a short leader, if possible. In April I seldom use anything lighter than a 4x, seven-foot leader. A 4x tippet gives you added strength for any lunker you might hook. Prospect with the artificial under logs and debris and around rocks and boulders. If you have a refusal or a miss, keep casting several times in the same general area before you give up. I've had trout strike a streamer a second and third time. This tendency to strike a second and third time seems to occur with streamers more than any other type of artificial. If persistence doesn't pay off, try one of the other three patterns. Sometimes a trout you've just missed on one pattern will readily take another streamer.

Where will you begin your trout season this year? Will you fish the same spot you've started the season for the past few years? Will you use spinners, cheese, salmon eggs or live bait because you've never tried streamers in April? Why not be brave and try a whole new world of early season fishing? Maybe, just maybe, you'll find a whole new type of fishing technique on those high-water early season streams with Muddlers, Buggers, Weenies and Ghosts.

Wooly Bugger

Thread: Black.

Tail: A small handful of black marabou.

Body: First, tie in a long black hackle at the tail. Then tie in and wind onto the hook a piece of dark-olive chenille. Next, take the black hackle and palmer the body by making wraps toward the eye. Tie it off.

Hook: Mustad 9672 or 79580, size 10 or 12.

Muddler Minnow

Thread: Black.

Tail: Small section of brown turkey wing quill.

Body: Several wrappings of gold tinsel.

Wing: Black bucktail over which are two matched sections of brown turkey wings. Wing points at the rear should be pointing upward. Alternate: A small bunch of gray squirrel tail hair.

Shoulder: Natural deer hair spun completely around the hook. Clip the butt sections toward the eye short to form the head. Add more deer body hair if necessary to get a well-formed head. Deer hair tips should flair out in all directions toward the rear.

Hook: Mustad 9672 or 79580, size 10 or 12.

Lady Ghost

Thread: Black.

Tail: None.

Body: Flat silver tinsel, ribbed with silver oval tinsel.

Throat: Five to 10 white bucktail fibers tied on top of the same number of yellow bucktail fibers.

Wing: Four peacock herls placed under four long matched badger hackles. Match the hackles with two on each side. Have the tips of the hackles extend slightly past the bend of the hook.

Shoulder: Take a bright-maroon feather from the neck of a ringneck pheasant. Tie it in on either side of the streamer.

Hook: Mustad 79580 or 9672, size 12 or 14.

Green Weenie

To tie the Green Weenie, take a piece of fluorescent chartreuse chenille and tie it in at the bend of a size 12, Mustad 9672 or 79580 hook. Make a small loop in the chenille about one-fourth the length of the hook shank. The loop becomes the tail. Wind the remainder of the chenille around the hook shank up to the eye. Cut off the excess.

Spinners for Early Season Trout

by Mark A. Nale   photos by the author

The dark clouds threatened rain as I eased into the Lehigh River. My hip boots wouldn't allow me to venture too far from the bank in the big flow, but good trout water seemed to be within easy casting distance. The two fishermen above me had the right idea—chest waders that let both of them be stationed mid-stream. It was perhaps my tenth cast when a trout struck, but I missed it. A second hit came a few tosses later and this time the treble hook held on to the scrappy brown.

A group of rafters drifted by along the far bank, their yellows and reds almost glowing in the overcast light. I took my camera out and was preparing for a shot when the clouds began to make good on their threat. I hoped that the gentle rain would improve the fishing, but it didn't make photography any easier. No sooner had I surrendered the camera to safety beneath my parka than a tug signaled the presence of another fish on the line. This time the gold spinner attracted a 10-inch brookie. I stooped to release my second trout, and the cold May raindrops dripped from my hat brim and dimpled the clear flow at my feet. I was glad to be wearing camo rain gear, for the rain showed no promise of abatement.

While walking the bank toward my original destination, Black Creek, I couldn't resist a few casts where the smaller flow entered the Lehigh. My intuition paid off. Some 10 minutes of angling resulted in catching and releasing three stocked brookies. Spinners attracted six more trout as I fished up Black Creek. Eleven trout in less than two hours—that's how effective spinners can be in the early season. In fact, spinners accounted for all of the several hundred trout that I landed from over a dozen different streams during April and May of last year.

Although I prefer the sparsely visited trout streams of July, spinners can be productive on the heavily fished waters found during the first few weeks of trout season. Trout come easily to those who know how to use the treble-hooked tool.

Beyond your trout stamp, license, rod, reel, line and lures (all to be covered later), a few additional pieces of equipment can help put a trout on the end of your line. Spinners can be fished from the bank, but you have access to more water if you use hip boots for smaller streams or chest waders on bigger water, such as Loyalsock Creek or the Lehigh River.

Are there trout down there? Are they looking at or following the lure? Was that tug a strike, or did the spinner just bump the bottom? Having the answers to these questions is important, and polarized sunglasses assist in revealing the answers. Watching how trout react to the spinner helps you differentiate between a strike and the feel of the lure bumping a rock. If trout are just following but not striking the spinner, switching lures or changing retrieve speed might be in order.

Retrieving spinners is murder on hooks, so another beneficial piece of equipment is a hook sharpener. Checking the hook points and touching them up as needed makes your days more productive.

Spinners can be used alternating with bait or as your only terminal tackle. On the opening morning, with anglers everywhere on stocked streams, it is probably more productive to stay at one spot, trying different types of bait and lures. Later in the day, as soon as the crowds thin and other anglers start to move, you can begin fishing spinners more seriously.

Spinners can be productive on the heavily fished waters during the first few weeks of the trout season. Trout come easily to those who know how to use the treble-hooked tool.

Covering water quickly

Spinners let an angler cover water quickly, and this leads to another of their uses—as a fish finder. Every trout won't hit a lure, but their reaction to it might give away their presence. My largest trout of one season was caught only because I spotted it when it drifted over to check out my spinner. I hadn't noticed the big trout in the deep water until it moved. The fish wouldn't even look at the spinner on subsequent casts, so I tied on a hook and baited it with a single salmon egg. It took several casts to get the drift correct, but the trout inhaled the egg when I finally got it near the fish.

My ultralight rod bowed in response to the battling trout in the swift current; but the hook held, and I was admiring 17 1/2 inches of rainbow at the water's edge after several minutes of runs and leaps.

Casting upstream

Although it is less important now than during the summer, I always fish by casting upstream and retrieving the spinner with the current. Retrieving with the current presents the lure to the trout in a more natural manner, and an upstream approach makes it less likely that the trout will spot you before it sees your spinner. The single biggest mistake that early season anglers make is standing too close to where they are fishing. Even stocked trout become wary after they have been fished over.

Cast to all trouty-looking spots. The closer you can get your lure to cover, such as submerged logs, large rocks, brush or an overhanging branch, the more likely your success. It's frustrating to have made several troutless casts near a logjam, only to watch as your brother perfectly places his spinner right at the edge of a log and is rewarded with a fat brown! An accurate caster catches more trout because his lures spend less time in the trees and more time in the best trout water.

Don't neglect the riffles. They make excellent spinner water. The pools hold many trout and most anglers concentrate on the still water. The riffles, even ones only 10 to 12 inches deep, also hold trout and usually fewer anglers.

One afternoon, following an in-season stocking, a friend and I stopped at one of the traditional stocking points along Bald Eagle Creek, Centre County. A woman and two men were stationed at the pool nearest the bridge, and 150 yards downstream we could see three anglers gathered at the next pool. My friend and I fished the riffles between the two pools and landed or missed over a dozen trout in that shallow water. I glanced back as we started casting into the riffles flowing under the bridge, only to see a few of those "pool anglers" now working the riffles that we had just fished.

Retrieve

The retrieve is just as important as casting accuracy and reading the water. While retrieving, keep your rod at a 90-degree angle to your line. Streamside trees sometimes make this impossible, but the closer you can get to this angle, the more hook-setting power you possess. If you want to catch a lot of trout on spinners, you need to set the hook, and set it hard. I set the hook with each bump that I feel or each flash that I see near my lure. Once you've worked to put the trout on the line, it's a shame to watch it wriggle free. Failure to set the hook or a hook with dull points accounts for many lost trout.

The retrieve speed can be varied with conditions, but I usually turn my reel handle just fast enough to keep the blade spinning. I do not recommend an irregular retrieve, or pausing during the retrieve to allow the spinner to flutter downward. Each of these techniques can be effective, but they make hook-setting difficult.

You encounter the same problem when casting across a swift flow. The current puts a bow in your line, which makes strike detection and hook-setting next to impossible. When casting and reeling in, always plan to keep a tight line with the rod in a good hook-setting position.

Cloudy water, temperature

Spinners are productive in clear or slightly cloudy water, but not as good as bait in cloudy water. Lures have taken a few trout from water the color of cocoa, but I had to make many, many casts to net each one. I'm not sure of the reason for this, but I suspect that it's because trout primarily use sight to locate spinners, and cloudy water hinders this sense.

Temperature is highly overrated as a major influence to either early season angling or a spinner's ability to attract trout. I've caught trout, both stocked and wild, in water ranging from 34 to 71 degrees. Opening day water temperatures aren't going to fall outside these limits. My brother Frank and I have done well with spinners in the 40-degree water that we often encounter on Pennsylvania's trout opener.

If there is anything that has an effect on stocked trout with respect to temperature, it's how quickly the temperature has changed, rather than what the water registers at the present time.

Rods

I prefer a short, five- to 5 1/2-foot, light- or ultralight-action graphite rod with quality guides. Graphite provides enough backbone for casting, setting the hook and landing a good-sized trout. Graphite is also significant because even in an ultralight rod, the rod tip stays still and straight during a retrieve, yet it is sensitive enough to allow an angler to "feel" the lure at the end of the line. With an ultralight fiberglass rod, the tip jiggles and dances like a conductor's baton, making strike detection difficult.

A five-footer offers convenience because it can be stashed in just about any car without the bother of taking the rod down. When I arrive at a stream, I'm ready to fish! A short rod also allows me to use an underhand cast that I need to fish in the tight quarters of small wooded streams. I could switch to a longer rod on larger streams, but even when it seems silly, I stay with my handy short rod and underhand cast because keeping these constant improves my casting accuracy.

Reels

You can fish bait with just about any spinning reel, but because spinner fishing requires constant casting and retrieving, a quality reel becomes a must. Here is what to look for in a serviceable reel. First, a reel that can be used for hours without wearing out your arm has to have a retrieve ratio of at least 5:1. How many screws, knobs, levers, etc., stick out from the face of the reel? At one time or another, every one reaches out and grabs your line when you are trying to make an important cast, and you wish they'd vanish. Look for a reel with as few of these nuisances as possible. A reel's drag is rarely used, but when a big trout hits, the drag needs to be smooth and easily adjustable.

I log quite a few hours of spinner fishing each year, so another factor in my reel selection is dependability. It's frustrating, if that's a strong enough word, to drive halfway across the state for a weekend of trout fishing only to have a bail spring or something else go wrong with a reel.

Line

The brand and pound-test of the line used for spinner fishing makes a lot of difference for several reasons. Lines affect casting distance and whether that trophy trout stays on or breaks free. Four- or six-pound test are my favorites for Pennsylvania streams. They give me enough strength to land a 20-incher, and their small diameter allows good casting with minimal effort.

Stren, Berkley Trimax and Sigma have all been good for me, as has DuPont Magnathin. I've been called "thrifty" (or was it "cheap") by more than one person, but I don't let money influence buying line. Cheap mono causes lost fish and much wasted time removing snarls from your spinning reel.

Swivels

Anytime two anglers discuss spinner fishing, the use of swivels invariably enters the conversation. A swivel prevents, or helps to prevent, line twist. I've experimented with swivels since the late 1960s, and during that time I've moved from a snap swivel to a barrel swivel, and currently I use no swivel at all. As soon as I mention that to another angler, the usual question is, "But what about line twist?"

A snap swivel prevents line twist and can be useful in the early season because it lets you quickly change lures or change from a lure to a baited, snelled hook and back in seconds. If you are going to use snelled hooks, make your own from three- or four-pound-test mono. Most packaged offerings use much too heavy line for Pennsylvania trout fishing.

One disadvantage of a snap swivel connected directly to the spinner is that the swivel tends to act as a hinge. If you make 20 casts, at least one will be ruined when the hook from your spinner swings back and grabs your own line. This rarely happens when using a barrel swivel and never happens when fishing without a swivel. For me, this disadvantage outweighs the quick-change advantages.

A barrel swivel solves the hinging problems and prevents line twist, but it creates another problem. All anglers agree that the weakest link between them and the fish is the knot that connects the hook or lure to the line. With a barrel swivel tied a foot or more above the lure, anglers have three knots (one on either side of the swivel and one at the spinner) that could result in the loss of a fish. That's too many "weak links" for me. If you must use a barrel swivel, use the smallest one that you can buy, and retie all knots at least once an hour.

On a properly working spinner, the blade should spin freely around the spinner shaft. Anything that hinders this free spinning causes the shaft to rotate, transferring that twist to your line and making a terrible mess. The three most likely causes of line twist are: a bent spinner shaft, a bent clevis (the little metal "U" that connects the blade to the shaft), and algae clinging to the shaft and/or clevis.

Check your lure if you notice that the line is twisting and kinking. If you can't correct the problem, replace your lure with a new one. By following this advice, you eliminate the need for a swivel.

Lures

The three most important characteristics of a spinning lure are a blade that spins freely, enough weight for casting and keeping your lure near the bottom, and a sharp hook. Mepps, Roostertail, Panther Martin and C. P. Swing all fit the bill here. My brother makes a quality lure from purchased parts. An investment of about $100 lets you build many spinners. Any lures built beyond your initial expenditure for tools and parts net you a considerable savings.

One opening day on a sportsmen's club pond in Bedford County, a fisherman near me caught trout after trout on a silver spinner while my salmon eggs went untouched. I tied on a silver spinner that had been very successful for me on other occasions, and I cast it into the same area as the other angler. Nothing! The stocked rainbows were only hitting his brand. On another opening day it was a fluorescent pink Roostertail (something that I would never use on wild trout) that caught trout uninterested in my more traditional offerings. Early last May, Larry Stump and I were fishing Six Mile Run near Philipsburg. We found a pool with some freshly stocked brown trout and we each caught two trout on gold spinners before they stopped hitting. We replaced the gold lures with silver ones and we each enticed savage strikes from the very same browns that were "bored" with a gold lure moments before.

Unlike summer angling for wild trout, lure color and make are important when fishing for stocked trout during the early season. It's not that any one color or brand is better than another; what's important is variety and having the "right" lure when the trout want it. Carry a variety of different lures and try several before moving to the next spot.

Stay away from spinners that are small and very light in weight. These "featherweights" restrict casting distance and they tend to "swim" to the surface instead of staying down where the trout are.

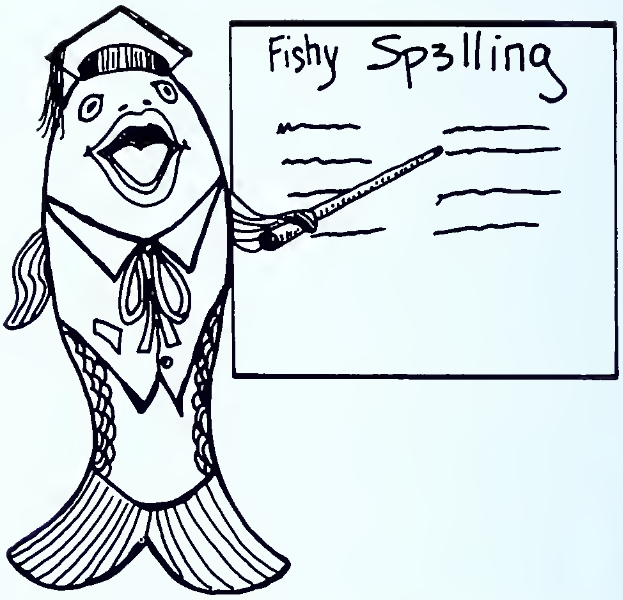
Spoons also catch trout, and it doesn't hurt to carry a few for added variety. Although a few anglers prefer them, I do much better with spinners because a spoon's irregular action makes strike detection difficult.

I hope that you find spinfishing as productive as I have. With the exception of very cloudy water, no other method consistently produces early season trout as well as spinners fished with light-action gear. Flies, bait and fancy scents may be fine, but I'll take those little shiny brass things any day. Give them a try and I think you'll agree.

KiDsPaGE!

by Steve Ulsh

Fishy Spelling



Something's fishy here. One of the words in each sentence is spelled incorrectly. Correct the spelling mistakes and write the correct word on the lines. When you've completed each sentence, write the circled letters on the lines at the end of these questions. We've done the first sentence for you.

1. The angler took the wrong roote to his favorite lake.

R O U T E

2. He recieved some good fish recipes in the mail.

___ ___ ___ ___ ___ ___ ___ ___

3. The teacher wanted to sponser a boy in the fishing tournament.

___ ___ ___ ___ ___ ___ ___

4. The questoin about the legality of Sunday fishing was settled in court.

___ ___ ___ ___ ___ ___ ___ ___

5. It's somttimes difficult to dig worms for bait in late summer.

___ ___ ___ ___ ___ ___ ___ ___ ___

6. The shape of the river bottom was otfen changed by floods.

___ ___ ___ ___ ___

7. It's easeir to catch crappies on cloudy days.

___ ___ ___ ___ ___ ___

8. It makes good sence to carry some first-aid equipment in your fishing vest.

___ ___ ___ ___ ___

9. The boys and girls were hopeng to catch a muskellunge on their fishing trip.

___ ___ ___ ___ ___ ___

10. The indains of Pennsylvania used fishing spear points made of bones.

___ ___ ___ ___ ___ ___

11. The bank of the stream was the perfect place for the northorn pike to hide.

___ ___ ___ ___ ___ ___ ___ ___

12. The stealthy largemouth bass emirged from its secret hideout under the lily pads.

___ ___ ___ ___ ___ ___ ___

Answer

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Trout Fishing Manners

Put these tips in your spring fishing memory book.

1. If you have a tangled piece of fishing line, don't throw it away. Roll it into a tight ball and put the line in your fishing vest or jacket pocket. Pieces of monofilament line can be dangerous to wildlife—especially birds.

2. Don't leave farm gates open. Remember that you're the guest of the landowner. Livestock can escape through open gates. Farmers don't like to spend their time rounding up stray cows, sheep and horses.

3. A streamside lunch is great on opening day, or any day of trout season, but take your cans, bottles and paper home. If you see someone else's lunch litter, try to bring it home also.

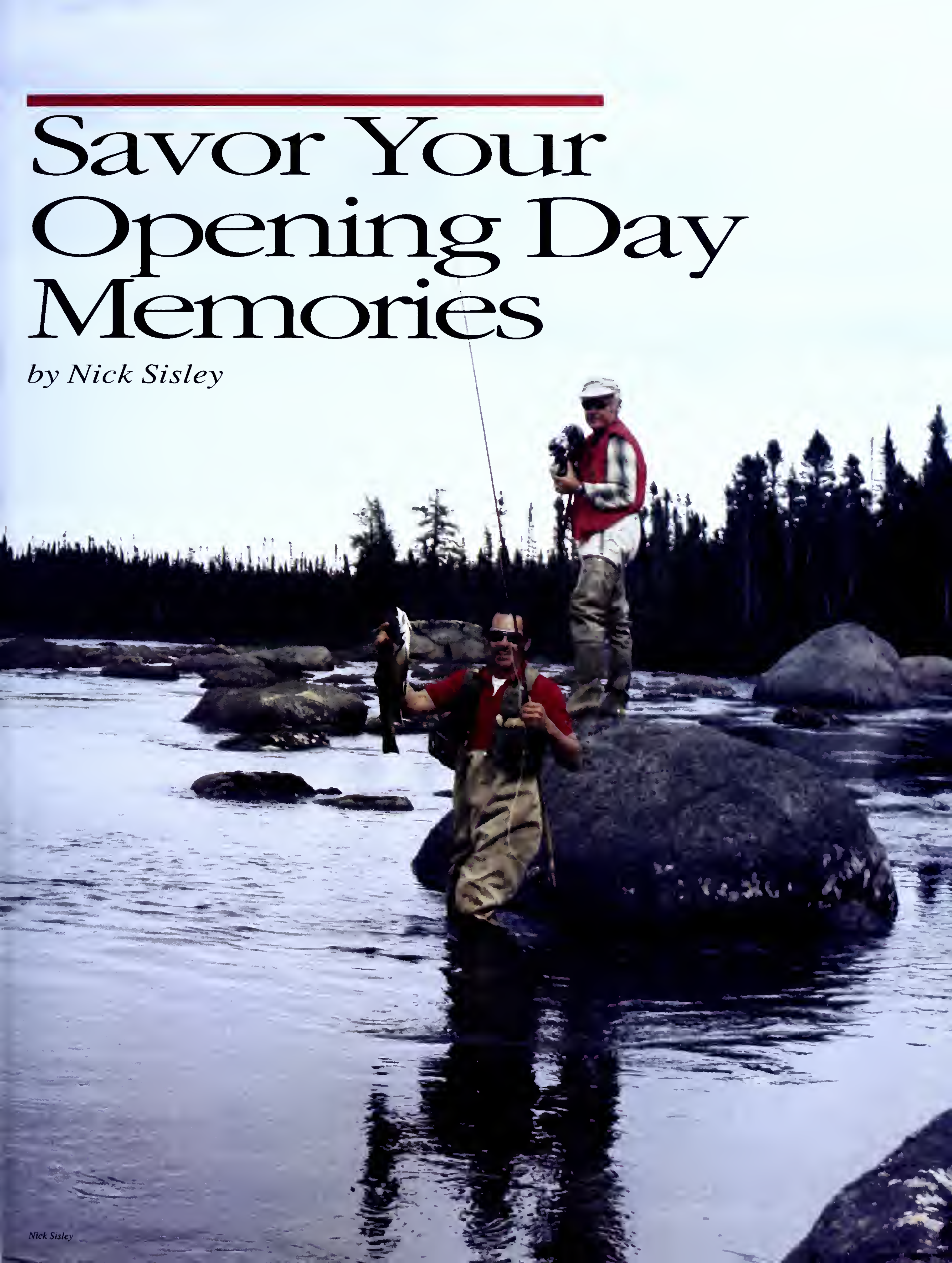
4. Spring means that farmers are planting crops. You're doing them a big favor by not walking or riding your bike over newly plowed fields. New plants and seeds need loose soil. Packing them down with footprints and bike tracks can sometimes stop them from growing.

illustration- Rose Boegli

Fishy Spelling Answers 1. Route, 2. Received, 3. Sponsor, 4. Question, 5. Sometimes, 6. Often, 7. Easier, 8. Sense, 9. Hoping, 10. Indian, 11. Northern, 12. Emerged **Trout Fishing**

Savor Your Opening Day Memories

by Nick Sisley



Nick Sisley

Like your 16th and 21st birthday, the day you got married, and celebrating the coming of your firstborn, the opening day of trout season is filled with excitement, wonder and anticipation. As the big April day approaches, who among us cannot help reflect on opening days past, or the memories of any number of trout days?

And that's what I'm doing today—dreaming, remembering about trout days in my past and taking vicarious journeys into 1991—of brook, rainbow and brown trout forays of the 1960s and 1970s, and even one in the 1980s.

What a cold opener I recall on Clinton County's Young Woman's Creek many years back. A frigid wind blew downstream, but the trout were still there, not anxious to nip the fly, but they could be caught. As soon as I picked up two rainbows I headed for the truck, filleted my catch and cooked them on a gas stove. I squatted low in the lee behind my vehicle.

My mind drifts from that duo of tasty rainbows to rainbows caught in Colorado. Clayt and Adele Dovey of Johnstown and the late Roger Latham, outdoors editor of the *Pittsburgh Press*, and I fished another superb trout stream, Frying Pan Creek.

Clayt and Adele are close friends. We promise to fish together every summer, and then we get too busy. This year we must change that.

And then there was Roger Latham. Few have the awareness of the natural world as did Roger. Somehow Roger was not only there—he understood so much more about the natural world than the rest of us.

For example, I never knew until that day that there was a bird that actually dived underwater for food. The Frying Pan Creek was a good rainbow stream, on a par with Pennsylvania's Young Woman's Creek.

We released all the trout that day.

A few afternoons later, Roger, Ned Smith and I wrangled an invitation to fling flies over a special part of Colorado's Roaring Fork. Roaring Fork was just that, a wall of white water that shot out of that part of the Rockies about as fast as Richard Petty goes around the Daytona track.

I wouldn't have enjoyed fishing that part of the stream. However, one enterprising developer had diverted a portion of this fairly large stream. These days they would probably shut you in the slammer for life if you tried to divert a trickle of any body of water, but honestly, this guy did a masterful job. From pool to pool, riffle to riffle, the stream was now beautiful, not only to fish, but trout, big, hungry trout, were everywhere—browns for the most part. The developer had even brought in aquatic life, many different forms of caddises, mayflies and stone flies.

Obviously, they had taken hold—as well or perhaps better than the trout. They practically had to drag Ned and Nick away from streamside by the scruff of the neck at dark. Of course, it had been just before that when the really big browns had begun their evening rampage.

Ned Smith. Roger Latham. What a privilege to have had the opportunity to share trout streams with these Pennsylvania outdoor giants.

Growing great ones

Brook trout. Pennsylvania has been known for growing some great ones, but our state is no doubt much more famous nationwide for the brookies in our tiny streams. What a magnificent resource!

Jim Bashline grew up in Potter County. The Allegheny River pools below Coudersport provided unparalleled trout learning experiences for Jim, but he fished the tiny headwater streams for native brookies, too. Though I've never fished one of those step-across Potter County brook trout havens with him, we did experience some exceptional brook trout sport in West Virginia one April. And our Pennsylvania lessons paid off.

We rented a Winnebago. Experts from the West Virginia Department of Natural Resources were going to show us some of the state's best trout waters over the next few days. Seven-inch brook trout were the farthest things from our minds. Jim and I were after browns and rainbows we'd measure in pounds. We cooked a brace of magnificent steaks in the camper the night of our arrival, talked into the wee hours, and then turned in. By three o'clock the heavy patter of rain on the roof woke us. It rained for 10 hours—a gully washer if there ever were one. Every trout stream was over its banks, the color of lightened coffee.

Walt Lesser, our DNR host, wasn't at a loss for long. We headed uphill, to the tops of the plateau country around Mt. Davis, 4,000

photos- Nick Sisley

feet high. There Walt led Jim and me to beaver dams that never muddied, and they were filled with native brookies. They couldn't resist little dry flies, especially dries with a tad of red mixed in—just like Pennsylvania native brook trout.

Native brookies

Then there were the native brook trout in Labrador, Canada. Noted outdoor filmmaker Wally Taber and I had gone there for Atlantic salmon. Wally caught several. I caught a few. These salmon had never been my forte—except for eating them.

When we tired of the salmon sport, the outfitter, Norm Hathaway, loaded us into his 182 on floats and flew us to a lake. He landed near the outlet and anchored the float plane. Then we waded to a spot where the water leaving the lake moved into the stream below. On his first cast Norm took a whopper—an honest five-pound-plus native brook trout. Seething with the anxiety of wanting to take a native brook trout of similar proportions, I reluctantly took time to photograph Norm and his first-cast catch, with filmmaker Wally Taber in the background.

I stripped out line like a crazed wild man. I'm certain it showed. The fly, a gargantuan Bivisible Norm had tied for me the night before, slapped down with all the subtlety of a V-8 Ford driven off a wharf into the ocean. A 12-incher snapped at it—the biggest brookie I'd ever hooked in my life!

Unceremoniously I stripped in line, skidding this great catch along the surface like Goldfinger would drag cinema-hero James Bond behind a speeding boat. Without admiring this, my biggest brook trout, for the slightest second, I wrestled the hook free of its jaw and again began stripping out line. I must have looked as if I were ready to join the cast of "One Flew Over the Cuckoo's Nest."

This time it was a 14-incher that engulfed the hardly shaken-off Bivisible. Again it was the biggest brook trout of my life. On Young Woman's Creek I'd have fought that fellow for at least five minutes and loved every minute of it. At the outlet of the unnamed Labrador lake, I skidded that char back as fast as I could, though that one did dip below the surface a time or two.

The unhooking took seconds. I didn't pause to admire the fish (I'm ashamed to admit it now), and I wickedly stripped out line and cast back and forth as if I were possessed.

The third cast resulted in a slightly softer touch-down. But the out-size fly bobbed along only for a few feet before it disappeared, this time not in a splashy take. It simply vanished. I was onto something bigger. A minute later I saw that it still wasn't what I was after. Maybe two-and-a-half pounds of magnificent, technicolored brook trout. On three successive casts I'd taken bigger brook trout than I had in all my life.

I didn't horse the two-and-a-half-pounder to the side of my waders, but I didn't fool with him, either. Nor did I take his picture. It was Moby I was after.

With my fourth cast I was more careful. I had the feel of the rod by then. If I do say so myself, I sent the fly beautifully to the upstream side of a black boulder, the top of which peeked only inches above the surface. The fly swirled around the rock and spun in behind, and I saw my Moby do it. Thankfully, I didn't set the hook until I felt the fish. Now I was satisfied. I held the rod up a bit. Then I just held on, enjoying. This was the brook trout that had brought me to far-off Labrador. Finally, I savored the ensuing minutes.

One more vicarious brook trout journey was undoubtedly my most memorable of all. New Brunswick, Canada. The Tabusintac, first major river north of the much-heralded Miramichi. When I was there, the salmon netting controversy was at its height. So few salmon were getting past the nets that the club with the lease on this river gave it up. Through all this, Miles Wishart owned a goose and fishing camp at the salty mouth of the Tabusintac. Miles was able to sell the river's fishing that summer.

What I discovered were the wildest brook trout you can imagine—sea-run brookies, bright and silvery, fresh from the ocean. But they were brook trout nonetheless. They were broad-shouldered brookies.

What these trout wanted to do most, it seemed, was strike a bushy dry fly, especially if it were flecked with a bit of red. The timing was around the Fourth of July. Traditionally, no club members fished then. "They" came for salmon. But because so few salmon had been entering the river, "they" figured no other fish were in the Tabusintac at any other time of the year. When my story hit the press, about how unbelievably good this sea-run brook trout fishing was, Miles Wishart didn't get a contract for the next summer. The club members would enjoy that special brook trout fishing themselves, thank you.

Since then I'm guessing the Atlantic salmon fishing on the Tabusintac has significantly improved, what with the netting gone or nearly so.

Cranked up

Rainbows. One opening day in Erie County the rainbows were all cranked up. The weather was good, and these fish hit well all day. The stream was heavily fished, but it didn't seem to matter to the fish or to the fishermen. The latter got along well. The former kept active.

But I can never think of rainbow trout without my mind wandering to Alaska.

Dave Egdorf motored us a long way upstream, but he knew the rainbows would be there, and that they would be big. Alaska's fishing for a number of species can be as good as it gets anywhere, like the action in Pennsylvania, but no angler is going to find fish at every turn of the river—even in Alaska. You have to learn what the perfect habitat is and where the best holding spots are.

When you find them, big Alaska rainbows aren't difficult. Unless maybe other anglers have been there the day before. I don't believe the big 'bows that Dave led me to had been fished over that year. Wanting to enjoy some unusual fun with them, I tied on a cork popping bug. Actually, they were assembled by Tom Eggler, a former editor of *Pennsylvania Angler*.

A cork popping bug for rainbows? It didn't work at Bellefonte's Fisherman's Paradise, but those Alaska rainbows were a pushover for it. Dave beached the boat and then directed me to wade out as far as I could. The current was along the far side. It was deeper there, and that's where the cover was. There wasn't any pressure to catch a trout first, because Dave wasn't fishing and no one was with us. I tried to keep a low profile, set the popper down softly, and then began popping it—little gurgles that I hoped the rainbows below wouldn't be able to resist.

And the rainbows rose—not to a fly, but to a cork popper. One after another. Rainbows we didn't measure. Only estimated their weight. In pounds, not inches.

Memories. Trout memories. Opening day trout fishing memories. I have them from all over the world, and my Pennsylvania memories have been just as exciting as are those from streams thousands of miles away. In the years to come all of us will be enjoying memories of this year's opening day. And the trout days thereafter, especially the ones here at home. Remember them well. Savor them.

Conservation Leadership Schools

Penn State University and the Pennsylvania Department of Education will offer the 1991 Conservation Leadership Schools this summer for students aged 15 to 18. The curriculum is taught in the field and includes environmental and conservation education activities in water quality assessment, forestry, wildlife management, innovative energy production, recycling, leadership, land-use planning and waste management. The schools are held at the Penn State Stone Valley Recreation Area in northern Huntingdon County. Students live in a camp-like setting on the shores of a 70-acre lake. Session I runs June 30 to July 13; session II, July 14 to July 27; and session III, and advanced group, August 1 to August 10.

For more details, contact Tammy Crissman, Penn State Continuing Education, Wagner Building, University Park, PA 16802. Phone: (814) 865-3443.

Angler's Notebook

by Chris Dolnack

Most warmwater species are now holding in shallow water, but an incoming cold front will move fish onto the nearest dropoff. When faced with deteriorating weather, use your depthsounder to locate breaklines adjacent to shallow water.

Successful fly fishermen know that the leader must deliver the fly lightly on the water. A level leader is a poor choice for most fly casting because it doesn't turn over properly unless it is short. Tapered leaders—both one-piece knotless and compound tapers—are designed to present the fly as naturally as possible.

The nail knot and nail-less nail knot are commonly used to attach the butt section of the leader to the fly line. But many beginning fly fishermen have discovered the convenience of plastic connectors that make attaching a new leader as simple as tying a couple of overhand knots in the butt section, threading the leader through an eyelet, and pulling it tight.

Silhouette is an important consideration for lure selection. In the spring, recently hatched forage fish are small. Increase your lure size as the season progresses.

Fish crankbaits in spring spawning areas such as coves, flats and wide points. Small, shallow-running short-billed crankbaits work well at this time.

Most fishermen concentrate their efforts on fishing the deep holes in early morning and evening. But these are not always the peak feeding times or places. When the water is cold, trout often move into shallow riffles at midday to feed when the sun is highest—and the riffle is the warmest.

Looking for some new trout water? Send for a copy of the Fish Commission's pamphlet *Trout Fishing in Pennsylvania*. It lists many of the Commonwealth's best trout waters.

Shad fishing comes into its own this month. The Bucks and Northampton County shorelines on the Delaware River is where the action will be.

Six-pound-test line is a good all-around choice for shad fishing. The actual break strength of most six-pound-test-rated lines is closer to 10 pounds and will handle most roe shad. Snags are frequent, so take along a spare spool.

If you're not losing some shad darts, you're not fishing deep enough, so take along plenty of shad darts in a variety of sizes and colors. Local bait shops can help with the selections based on current water conditions and recent catches.

Native brook trout are fragile creatures. To reduce the chances of the fish swallowing the hook, use a size 6 or 8 barbless hook and set the hook as soon as you feel the strike. If you won't be keeping the trout, wet your hand before handling it and if at all possible keep the fish in the water while unhooking it.

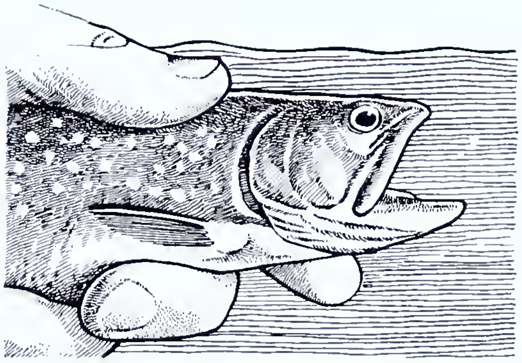


illustration- George Lavanish

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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ANGLERS CURRENTS

Huhn, Yorks, Steiner Honored

Linda L. Steiner

Commissioners Ross J. Huhn (left) and J. Wayne Yorks (right), and WCO Robert Steiner (center) received Pennsylvania Council of Trout Unlimited awards at the group's fall conference in Monroeville. Huhn and Yorks received "Outstanding TU Member Conservationist" awards. They were cited for "outstanding efforts in the preservation and enhancement of the coldwater resources of the Commonwealth" through their 10-year terms on the Fish Commission. Commissioner Huhn lives in Saltsburg, and Commissioner Yorks resides in Benton.

WCO Robert Steiner was named "Outstanding Professional Conservationist" for his work on behalf of trout angling and coldwater conservation in his district, Venango County. Steiner is an 18-year veteran of the Commission Fisheries and Law Enforcement divisions. He formerly served in the U.S. Coast Guard.

Three State Records

Last October 22, Jerry Swidzinski was casting a grub in Conneaut Lake, Crawford County, when he nailed a state record white bass. His catch weighed 3 pounds, 12 ounces and measured 18.375 inches long. The old state record white bass weighed 3 pounds, 8 ounces.

Trolling a spoon in Lake Erie did it for Greg Lasko last September 29. A state record chinook salmon ambushed his offering. The new state record fish weighed 28 pounds, 15 ounces, and was 39.75 inches long. Lasko's salmon beat the old state record by about 4.5 pounds.

November 3, 1990, was a lucky day for Dean M. Scarff at Lake Marburg, in Codorus State Park, York County. Scarff hauled in a new state record white perch that weighed one pound, 5 ounces and was 13 inches long. The old state record white perch weighed one pound, 4 ounces. Scarff fooled the state record white perch with a nightcrawler.

Mike Simmons

Greg Lasko hefts his state record salmon.

Art Michaels

The Commission Division of Boat Registration staff is (left to right) Cindy Snyder, Clara Roy, Division Chief Andrew Mutch, Mary Little and Linda Helms. The staff processes all boat registrations. The staff has mailed some 300,000 boat registration renewals, like the ones in trays in this photograph. These trays are stacked 20-high, and each tray contains some 500 renewals.

ANGLERS CURRENTS

New Trout Fishing Opportunities for 1991

Trout anglers may want to check out this list of new waters, extensions, and delayed-harvest projects implemented in 1991.

New waters

Laurel Run, Jefferson and Clearfield counties. A 2.9-mile section of Laurel Run will be added in 1991. This area of the Commonwealth has had limited stocked trout opportunities because of coal mining. Hopefully, local anglers will pursue improved water quality.

Canoe Creek, Jefferson County. A 2.8-mile stretch of Canoe Creek below the confluence of Painter Run will be stocked with brook and brown trout. Near Cloe Lake, Canoe Creek will enhance limited local angling opportunities.

Lily Lake, Luzerne County. This 160-acre lake will be added to the 1991 inseason stocking schedule. Brook, brown and rainbow trout will be stocked.

Switzer Creek, Lehigh County. A 3.5-mile section from the T-784 and T-649 junction upstream will be stocked as a new water in 1991. Access and parking are excellent. Brook, brown and rainbow trout will be stocked for opening day.

Liebs Creek, York County. A two-mile section from T-558 downstream to the mouth will be stocked with brown and rainbow trout in 1991. Liebs Creek is an important waterway to this region of the Commonwealth where public access to private waters is increasingly denied.

Turtle Creek, Allegheny County. Local effort to improve water quality will again restore Turtle Creek to the stocking program. A preseason stocking of brook and brown trout beginning near the Saunders Station bridge will be conducted in 1991. Almost four miles is added for anglers. Water quality monitoring is continuing to ensure that no changes have occurred to diminish water quality before stocking.

New delayed-harvest areas

Neshannock Creek, Lawrence and Mercer counties. A new 1.1-mile delayed-harvest project has been created for 1991 on Neshannock Creek near Volant. The project begins at the Shenango Beagle Club property line and ends at the T-1009 bridge. Anglers eager to hone trout fishing skills can fish year-round, including the traditional closed period from March 1 to opening day. Flies, streamers, spinners and artificial lures are permitted.

Mark A. Nale

Little Sandy Creek, Venango County. The historical fly-fishing-only regulation on Little Sandy Creek near Polk Center will change to delayed harvest in 1991. This will extend the catch-and-release period to June 15.

Kinzua Creek, McKean County. A 2.3-mile section of Kinzua Creek from the Route 219 bridge downstream to Camp Run will "open" to year-round trout fishing in 1991 as a delayed-harvest project. Brook, brown and rainbow trout will be stocked. Catch-and-release angling is permitted from March 1 to June 15. Artificial lures—flies and spinners—are permitted.

Bowmans Creek, Wyoming County. The one-mile fly-fishing-only project near Route 292 will become the region's newest delayed-harvest area in 1991. This expands the opportunity for catch-and-release angling in an excellent trout fishery supported by stocking to June 15.

Little Schuylkill River, Schuylkill County. A 1.7-mile stretch near New Ringgold has been approved as a new delayed-harvest area. Recovery of this section from acid mine drainage has occurred enough so that stocked trout will carry into the summer. Brook and brown trout will be stocked. Anglers may use artificial lures—flies and spinners.

French Creek, Chester County. Delayed-harvest regulations to extend the catch-and-release period will affect the former 1.2-mile fly-fishing-only project. Brown and rainbow trout will be stocked.

West Valley Creek, Chester County. A 1.2-mile section is a new delayed-harvest project in 1991. Local anglers and landowners have joined to establish this unique fishery program in a highly populated area of the Commonwealth. Brown and rainbow trout will be stocked.

Expanded limits

Stocking limits have been expanded on the following waters for 1991 with landowner cooperation: Taylor Run, Lawrence County; Little Sandy Creek, Armstrong and Jefferson counties; Monocacy Creek, Northampton County; South Branch of Codorus Creek, York County; Wissahickon Creek, Philadelphia County; and East Branch of Brandywine Creek, Chester County.

On behalf of all the Commonwealth's anglers, the Commission wishes to thank these landowners for all the new opportunities they provide.—*Martin T. Marcinko, Coldwater Unit Leader.*

On the Water

with Dave Wolf

Of Good and Bad

It is early April and anticipation runs high. Some anglers are already casting their offerings on specially regulated waters open to trout fishing year-round, and returning their catch as required by law. Others wait, spending their time at the local tackle shop replacing items lost or adding something new to their arsenal of lures, lines and rods. Others visit their cabins in the north, making sure everything is in order come opening day.

There is little denying the tradition of opening day of trout season, much akin to the opening of buck season in Pennsylvania. An estimated 650,000 license buyers will be out come April 13, and another 338,000 or so age 12 to 15, plus an untold number of younger children—quite a mess of anglers lining Pennsylvania's trout waterways.

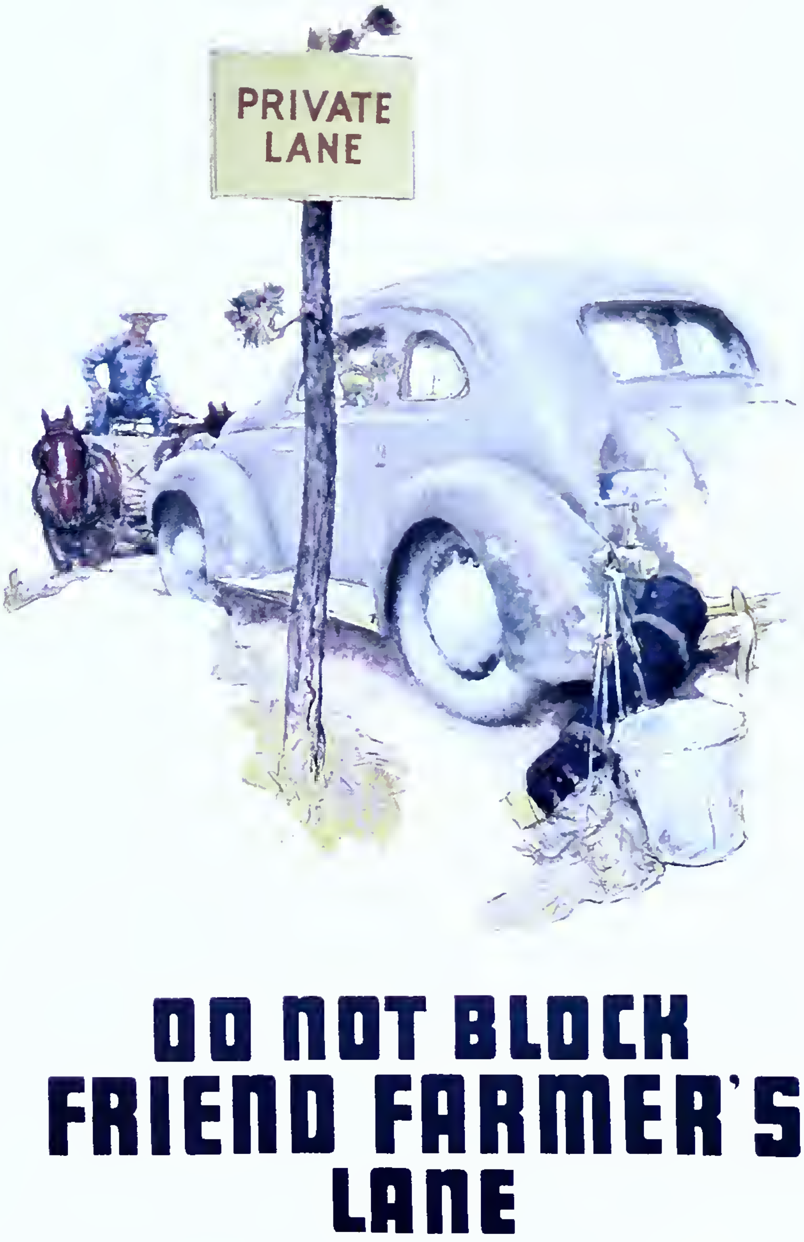
The good part is that the water will push cold and hard against the waders and boots of the wading anglers, and that bright silvery trout will be brought to net to be released or creeled. The sting of cold hands and stomping of numb feet will do little to dampen one's enthusiasm.

Yes, the good will be found in sportsmanship and a kinship found only among anglers, who will share the better pools and leave the water to bypass anglers fishing above or below them. They are courteous and kind citizens of the stream banks and lake shores, often offering advice to those who are not doing as well. They often pick up litter left behind by others, some to the extent that their creels are full of nothing else at day's end.

Of course, there will be those who ignore all ethical standards. We have all met them at one time or another—those who squeeze a youngster out of a pool full of trout, wade next to you and cast their lures by yours after you have taken a few fish, or even wade right in front of you.

They can be found building fires on private property, blocking access to fields and driveways, crawling over fences, and littering the landscape. They are often wild-eyed, looking near-crazed in pursuit of their limit, and how they obtain it does not matter. There are the lawbreakers as well, those who think they are more privileged than others, that two limits are fine and that littering is an acceptable social behavior. The latter can be taken care of by the laws on the books; the ignorant cannot. We either have to grin and bear it or politely tell them that they fall short of the realm of the ethical angler, something which I suggest to no one because it may create more problems than it is worth. Anglers of this sort often become irate when a so-called "do-gooder" chastises them for their behavior.

The bad among us create problems that we, as anglers, can do without. They often create the posting of streams, leave our beautiful environment cluttered with litter and aggravate the good angler to the point that they can ruin our day. Society is full of people both good and bad. They need not carry a fishing rod. Some carry harmless-looking briefcases and wear neatly creased pinstriped suits. They are products of our society—people who care little about others or the environment.


PRIVATE LANE
DO NOT BLOCK FRIEND FARMER'S LANE

PA Fish Commission photo

The problem remains that when they fish they become part of the fishing fraternity—and we are often blamed for their wrongdoings. We must be aware of the bad and balance it with good.

Ask permission to fish private lands and don't build fires there. Be sure to take more home than what you came with, and that means litter, the breath of the cold day, and the memories that you will creel.

When the sun sets this April 13 and the chill returns to the April air, you may feel good about the day and yourself and the part you have played in protecting and enhancing our sport in the years to come.

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Straight Talk

Death of a Sportsman

All Pennsylvania sportsmen were immensely saddened by the sudden, tragic death of U. S. Senator John Heinz. Pennsylvania has lost not only a great senator, but we have lost a fellow sportsman and a good friend.

On the day of his death, Senator Heinz was working for Pennsylvania, traveling around the state. I was struck by the press reports about his meeting in Williamsport before he boarded the fateful charter flight that took his life. His friends reported that the Senator was thinking about and talking about going fishing.

Like millions of Pennsylvanians, John Heinz loved to fish. He was an avid fly fisherman who pursued Pennsylvania's trout with almost the same intensity that he pursued Pennsylvania's voters. It is hardly surprising that his thoughts turned to fishing when he spoke to his friends and fellow anglers in Williamsport on the morning of April 4. Opening day was just nine days away, and fishing was probably on the minds of many Pennsylvanians that morning. And then tragedy struck, and all our thoughts and prayers turned to Senator Heinz, the children at the school where the aircraft crashed, and the pilots and crew who lost their lives with the Senator.

Senator Heinz promoted Pennsylvania fishing among his friends and colleagues from throughout the nation.

He often brought fellow senators, including the likes of senators Alan Simpson and John Danforth, to join him in fishing for Pennsylvania trout.

Senator Heinz cared. He cared about clean water and clean air and environmental protection. He cared about maintaining and improving fisheries, not just in Pennsylvania, but throughout the nation. Senator Heinz worked with Pennsylvania sportsmen and environmental organizations in support of constructive action to deal with acid rain and water pollution. He cared about wetlands protection and about restoring migratory fish to Pennsylvania waters. He regularly met with concerned sportsmen to hear their views and translate those ideas into action. He cared about the Fish Commission and its future.

When my predecessor, Ralph W. Abele, retired in 1987, Senator Heinz took time from his busy schedule to attend Ralph's retirement banquet to honor Ralph and relate his love for Pennsylvania fishing.

Reading the obituaries for this fine gentleman, one only gets a hint about his vitality in dealing with the many issues that confront our state and nation today. I know that all Pennsylvania sportsmen joined Governor Casey in expressing our heartfelt sympathy to his family at the time of their tremendous loss.

When you wet a line this year, join with me in saying a silent prayer for your fellow angler, Senator John Heinz. We will miss him on the streams and in the Senate. The outdoors has lost a great friend and eloquent spokesman.

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

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The covers

This month's front cover, photographed by Wally Eberhart, is a panfish angler's delight, and this month is a terrific time to try your luck on Keystone State panfish. See pages 8 and 24 for specifics. This issue's back cover, photographed by Joe Workosky, shows a successful angler about to release a stocked brownie he caught on a southwest Pennsylvania trout stream. What do you think that stocked trout is worth? More than dollars and cents? The answers appear in the article beginning on page 14, and you might be surprised just how valuable stocked trout are. Nearly every angler and boater has an opinion on Commission regulations, and the article on page 19 shows you how best to let the Commission know your views. If you're a boater, you might want to soak up the information in the article on page 21.

This month's 125th Commission anniversary celebration continues with the article on page 4. It focuses on herpetology in Pennsylvania. The inspiring idea is that the prominent 18th century herpetologists contributed much of what they know by studying the reptiles and amphibians of Pennsylvania.

Lastly, in this issue please turn to page 31 for a special perspective on Operation Desert Storm.

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The Historical Perspective

by Dr. C. J. McCoy

Herpetology can be broadly defined as the scientific study of amphibians and reptiles. As a distinct branch of science, herpetology first appeared in Renaissance Europe and slowly took form through the 17th century. The history of herpetology in the New World dates from the middle of the 18th century, and the cities and personalities of early-day Pennsylvania played a major role in the development of our knowledge of amphibians and reptiles in North America.

Consider the most prominent Pennsylvania herpetologists and their contributions.

Herpetology in Pennsylvania actually began with visits by the European explorer-naturalists who discovered the biological riches of the North American continent. Among the first of these was the Swedish naturalist Pehr Kalm (1715-1779), a student of the great Linnaeus. Later came the German Johann Schoepff (1752-1800), who collected reptiles in Pennsylvania while serving as surgeon to a Hessian regiment during the Revolutionary War.

Schoepff was especially interested in turtles, and eventually published *Historia Testudinum*, a major book about his collection. Among the specimens he obtained in Pennsylvania were spotted turtles (*Clemmys guttata*) and the first known specimens of the bog turtle (*Clemmys muhlenbergii*).

Later came the Frenchman A. M. F. J. Palisot de Beauvois (1752-1820) who collected salamanders in the vicinity of Philadelphia. One of his discoveries was the red salamander (*Pseudotriton ruber*).

Nearly all the naturalists of this early era were Europeans, who owed their allegiance to European patrons or institutions. The specimens, notes and drawings they collected in the New World were sent back to Europe for study and publication by European scientists. By the end of 1817, almost a third (24) of the Pennsylvania amphibian and reptile species had been discovered and named.

Philadelphians

However, the last decades of the 18th century brought the beginnings of home-grown American natural science. The start of this period was marked by the publication in 1794 of the first species description in an American journal. Among the earliest writers of this period in herpetology were the Philadelphian William Bartram (1739-1823), a naturalist and explorer best known for his travels in the South, and the Philadelphia physician and professor of natural history Benjamin Smith Barton (1766-1815).

Philadelphia was the center of scientific activity and herpetology in the developing nation. The American Philosophical Society was founded there in 1742, and the Academy of Natural Sciences was established there in 1812. A remarkably productive group of naturalists was associated with these institutions, and an unparalleled era of descriptive herpetology was launched.

Among the most prominent of the Philadelphia naturalists who worked in herpetology were Charles Alexandre Le Sueur (1778-1846), John Eatton LeConte (1784-1860), Thomas Say (1787-1834), and Jacob Green (1790-1841).

Perhaps the greatest influence on American herpetology from this group was made by the Philadelphia native Richard Harlan (1796-1843). Harlan was a physician employed by the city of Philadelphia, but he also maintained an association with the Academy of Natural Sciences and worked on herpetology and other natural history pursuits in his spare time. His is the distinction of publishing the first complete catalogue of the amphibians and reptiles of North America (1826-1827). Between 1818 and 1838, 28 currently recognized species of Pennsylvania amphibians and reptiles were named, mostly by members of the Philadelphia group.

The end of this era was marked by the publication in 1842 of the second edition of *North American Herpetology*. This book, a classic, richly illustrated atlas of amphibians and reptiles written by John Edwards Holbrook (1796-1871), summarized the prodigious accomplishments of the era. Holbrook, who has been called the "father of American herpetology," was a resident of South Carolina, but he received his medical degree in Philadelphia and in later years studied the Academy of Natural Sciences collection in preparing his masterwork.

Baird, Cope

The next phase of Pennsylvania herpetology was the era of Baird and Cope. Both men were native Pennsylvanians, and both must be considered to be among the most prolific and influential herpetologists.

Spencer Fullerton Baird (1823-1887) was born in Reading and graduated from Dickinson College in Carlisle, to which he subsequently returned as professor of natural history. As a young man Baird was an avid field biologist, who made extensive collections of amphibians and reptiles, and other animals, in the mountains and valleys of southcentral Pennsylvania. During his tenure at

Herpetology:

Dickinson, Baird published many scientific papers describing his finds, and reviewing what was then known about the amphibians and reptiles of North America.

In 1850 Baird was appointed as the first director of the National Museum of Natural History, and moved to Washington, DC. His Pennsylvania collections went with him and formed part of the nucleus of the Smithsonian's great collection of amphibians and reptiles. Many of Baird's specimens can still be found on the shelves of the National Museum.

Edward Drinker Cope (1840-1897) was born in Philadelphia to a family of wealthy Quaker merchants. Cope was apparently a prodigy—he visited the Academy of Natural Sciences at the age of six and made extensive notes on the trip. As a youth Cope was sent to family farms to work during the summer, and in his spare time he collected reptiles and amphibians in southeastern Pennsylvania.

After the age of 18 Cope was a full-time working scientist who published many papers and books on amphibians and reptiles. His life-long base was Philadelphia, first at the Academy of Natural Sciences and later in a laboratory he built in two adjacent houses in a residential neighborhood.

Cope did not restrict his interests to herpetology; he seemed to have an insatiable desire to bring order to all of zoology. In later years Cope's attention was drawn increasingly to fossils, fishes and other animals. But throughout his life Cope returned again and again to studies of Pennsylvania amphibians and reptiles. During the last decade of his life (1892) he published a paper on a small collection of amphibians and reptiles from Franklin, Venango County, that included the previously unknown shortheaded garter snake, *Eutaenia (=Thamnophis) brachystoma.*

Cope's monumental contributions *Batrachia of North America* (1889) and *Crocodilians, Lizards and Snakes of North America* (1900), which marked the end of this era, relied heavily on Baird's Pennsylvania collections in the National Museum. During the decades between 1838 and 1900, largely as a result of the work of Baird and Cope, 18 additional species of Pennsylvania amphibians and reptiles were discovered.

Modern era

The modern era of herpetology in Pennsylvania (1900-1982) began with renewed activity by naturalists associated with the Academy of Natural Sciences in Philadelphia. Although Witmer Stone (1866-1939) was primarily interested in birds, and Henry Weed Fowler (1878-1965) was the curator of fishes, they also collected amphibians and reptiles and published various lists and observations.

In 1915 Emmett Reid Dunn (1894-1956), then a student at Haverford College, began to publish on the herpetology of Pennsylvania. Dunn is recognized as an outstanding expert on the amphibians and reptiles of the American tropics, but he continued to collect, observe and

Hunt Institute, Pittsburgh, copied from the original at The Academy of Natural Sciences, Philadelphia

M. Graham Netting was the first curator of herpetology at The Carnegie Museum of Natural History, in Pittsburgh. This 1947 photo shows him with a snapping turtle.

write on the Pennsylvania amphibian and reptile fauna, particularly after his return to Haverford in 1929. During his years in Philadelphia, Dunn was the honorary curator of the amphibian and reptile department at the Academy.

Early in this period the Pennsylvania Department of Agriculture sponsored a series of monographs on the amphibians and reptiles of Pennsylvania. These faunal studies, written by Harvey Adam Surface (1867-1941), were published in four volumes: *Serpents of Pennsylvania* (1906), *Turtles of Pennsylvania* (1908), *Lizards of Pennsylvania* (1908), and *Amphibians of Pennsylvania* (1913). Although they contain some original observations and lists of localities from which specimens were examined, these publications also include some misinformation taken from other writings. Surface was an enthusiastic and productive worker, but he was also uncritical when it came to accepting the work of others. Unfortunately, Surface's collections have been lost, so the accuracy of identifications and locality data cannot now be verified.

Philadelphian Edward Drinker Cope (1840-1897) was the most prolific herpetological writer in history.

During the early decades of the 20th century, herpetologists became active at many colleges and universities around Pennsylvania. One enduring result of this activity is a series of local faunal lists, which contains most of the published information on the geographic distribution of Pennsylvania amphibians and reptiles. Two studies of this period had larger pretensions: *The Amphibia of Pennsylvania* (1926) by Norman Hamilton Stewart (1885-1970), and *Reptiles of Lancaster County and the State of Pennsylvania* (1928), by Harry Justin Roddy (1856-1943). Both are incomplete, however, and Roddy's work is flawed by misidentifications and uncritical acceptance of sight records.

In 1896 the steel baron and philanthropist Andrew Carnegie established the institution that would house The Carnegie Museum of Natural History in Pittsburgh. Herpetology at Carnegie Museum began with the work of D. A. Atkinson (b. 1875), a Pittsburgh physician and naturalist who was also honorary curator of the Section of Amphibians and Reptiles. Atkinson published several papers on the amphibians and reptiles of the Pittsburgh region, including a life history study of the now endangered Massasauga (*Sistrurus catenatus*).

Pennsylvania native Spencer Fullerton Baird (1823-1887) was the first director of the United States National Museum of Natural History.

In 1925 M. Graham Netting joined the museum staff as its first full-time herpetologist. Netting published many papers on the amphibians and reptiles of Pennsylvania (1927-1944), including several complete faunal lists and keys. Several of Netting's longer papers were published in the biennial reports of the Pennsylvania Fish Commission.

Overlapping Netting's period of activity by a few years was that of Roger Conant, curator of reptiles and later director of the Philadelphia Zoological Garden. Conant produced a number of serious systematic papers on Pennsylvania amphibians and reptiles, and several faunal studies. Working in parallel with Conant, at the Carnegie Museum of Natural History, was Neil D. Richmond. Richmond directed an extensive herpetological survey program in the early 1950s that resulted in significant baseline collections from many parts of Pennsylvania.

The end of this era of Pennsylvania herpetology was marked by publication in 1982 of my *Amphibians and Reptiles in Pennsylvania*, which summarized the information on geographic distribution of Pennsylvania amphibians and reptiles gathered over the previous 250 years.

Herpetology in Pennsylvania is continuing and growing, with increasing numbers of institutions and individuals becoming involved in studies of amphibians and reptiles. The focus of these studies, however, is turning more and more to the area of conservation and preservation of our natural heritage. In historical records, 73 species of amphibians and reptiles have been found within the borders of the Commonwealth of Pennsylvania. We now believe that at least four of these have been extirpated—that is, the Pennsylvania populations of these species have been wiped out.

Several other species are considered "on the brink" of extirpation, and are now listed as endangered or threatened. Many of these species have felt the effect of the steadily growing human population of the Commonwealth. Replacing wetlands with shopping malls has an irreversible influence on amphibian and reptile populations. Increased recreational use of the mountainous parts of Pennsylvania has brought native amphibians and reptiles into confrontation with sometimes unsympathetic human visitors. And there are more subtle effects, such as those of acid precipitation and increased ultraviolet radiation, which nevertheless take a toll on the native fauna.

Pennsylvania is in a struggle to save a part of the native amphibian and reptile fauna that has provided such a rich history of herpetology in the Commonwealth. Through regulation of overt threats to species security, protection of threatened species and habitats, and educational programs, the Fish Commission is working to ensure that the amphibians and reptiles of Pennsylvania will serve generations of herpetologists to come.

Dr. C. J. McCoy is curator of the Section of Amphibians and Reptiles at The Carnegie Museum of Natural History, in Pittsburgh. He currently chairs the Commission Herpetology Advisory Committee.

Kraig K. Adler

Philadelphian Richard Harlan (1796-1843) wrote the first catalogue of North American amphibians and reptiles.

Kraig K. Adler

John Edwards Holbrook (1796-1871), who studied in Philadelphia, wrote the atlas North American Herpetology *in 1842. He has been called the "father of American herpetology."*

Fish Commission Connection

Before 1974, the Fish Commission had jurisdiction for "fish, frogs, tadpoles, and turtles" and the bog turtle (*Clemmys muhlenbergii*) was declared an endangered species.

In 1974 the Fish Commission requested and received from the legislature jurisdiction for all Commonwealth amphibians and reptiles, including "rare" and endangered species.

The following year, Executive Director Ralph W. Abele convened a meeting of amphibian and reptile specialists, and in 1976, Abele selected nine unpaid volunteer members of a Herpetology Advisory Committee to meet with and advise the Commission concerning herpetological matters. A herpetology and endangered species coordinator was also selected in 1976.

From 1977 to 1983, the Fish Commission signed a cooperative agreement for the management of endangered species (including amphibians and reptiles) with the U.S. Fish and Wildlife Service. A five-year endangered species project was approved by the U.S. Fish and Wildlife Service and was implemented for two years until federal funds lapsed. The project made possible the publication of a checklist, bibliography and atlas of distribution of Commonwealth amphibians and reptiles, field status surveys for endangered species, several federal-state law enforcement training workshops concerning endangered species, and the development of published materials and audio-visual presentations to educate the public.

Portions of statutes and regulations were revised for the management, enhancement and protection of amphibians and reptiles, and the Commission staff continued to meet with the Herpetology Advisory Committee once or twice each year for discussion and recommendations concerning these matters.

Signed into law in 1982, the Wild Resource Conservation Act became effective in 1983. It continues to provide the primary funding for contracted projects concerning amphibians and reptiles. Projects have included:

- a three-year study to gather certain types of biological data about timber rattlesnakes and sociological data about persons within the context of organized amphibian and reptile hunts.
- a four-year project to assess the current status of 18 endangered, threatened or status-indeterminate species.
- a one-year inventory of amphibian and reptile species in Presque Isle State Park.
- the production of amphibian and reptile posters and other educational material.
- a two-year study of genetic "finger-printing" in selected reptile populations.

A newly funded three-year project concerns assessment of the effects of translocation on timber rattlesnakes.

The Fish Commission continues to receive assistance from others in the public and private sector with its responsibilities for Pennsylvania's amphibian and reptile fauna, and to meet with the Herpetology Advisory Committee and revise regulations, resulting in new endangered, threatened and candidate species lists, the imposition of a new individual rattlesnake hunter permit, and a restructuring of regulations governing season and possession limits, and the conduct of organized amphibian and reptile hunts.

—Clark N. Shiffer, herpetology and endangered species coordinator

Jigging for Panfish

by Chris Dolnack

Most fishermen cut their angling teeth on bluegills, sunnies or crappies. Fact is, panfish are the most sought-after species in Keystone State waters, although many anglers would hesitate to admit that they still enjoy fishing for such small fry.

The beauty about fishing for panfish is the simplicity of terminal tackle—hooks, splitshot, bobbers, an assortment of jigheads, curly-tails and perhaps some Power Wigglers or Crappie Candy. My panfish tackle fits neatly into a Plano Pocket-Pak, ready to go anywhere, without taking up a lot of room in the process.

Whether you prefer largemouth bass, smallmouth bass, bluegills, crappies or rock bass, they're all members of the sunfish family Centrarchidae. And in Pennsylvania the bluegill is arguably the most abundant of all panfish.

Pound for pound, bluegills are about as strong a fighter as there is, especially on ultra-light tackle. And hand-size bluegills make for good eating. If you're after "bull" bluegills or "slab" crappies, the spawn is the time to be on the water.

Bluegills begin spawning when the water temperature reaches approximately 67 degrees, usually in mid- to late May. Spawning peaks in June, but egg laying may continue throughout the summer.

In favorable conditions, bluegills reach sizes of seven to 10 inches and weigh up to a pound. Crappies can grow to more than a foot long in the best conditions.

Like bluegills, crappies school and move around a lot. They can be caught in great numbers this time of year, when they move into the shallows to spawn. If you catch one, you can be sure there are others close by.

The black crappie is usually larger than the white crappie. Its back is black, gray-black or olive with a few lighter scales. The dark spots and streaks give rise to the moniker "calico bass." The white crappie has an olive-green back and silver sides with a light-yellow or olive hue. If you have trouble telling the two crappies apart, count the spines on the dorsal fin. The white crappie has six spines. The black crappie has seven or eight spines.

Panfish feed on all forms of aquatic life. Bluegills prefer insects, and crappies are best noted for devouring small minnows. Small insect or minnow imitations such as spinners, spoons, wet flies and streamers are all productive baits, but the easiest to fish—and most effective—is the jig.

I've always been partial to miniature shad darts, ranging from 1/32- to 1/8-ounce, in red/white, green/white and yellow/white color combinations. They've always produced good numbers of panfish and are durable. Using a small bobber not only helps you detect a strike, but it also helps you cast these tiny lures.

A five- to 6 1/2-foot ultralight spinning rod and high-speed-retrieve reel spooled with two- or four-pound-test line is ideal. When you fish with a bobber, use clear line. But if you plan to fish deeper structure, consider a high-visibility line to aid in detecting strikes. I've gotten into the habit of loading an extra spool with high-visibility line just in case.

Fish micro-jigs as-is for crappies, or tip the hook with a mealworm for bluegills. For some reason, bluegills are reluctant to take an unbaited jig. This point was clearly illustrated one day at Lake Ontelaunee, near Leesport in Berks County. Two gentlemen were fishing near me, just off Route 73. The crappie action had slowed somewhat, so one of the anglers tipped his small marabou jig with a mealworm. He caught quite a few bluegills, but did not hook one crappie in the 20 minutes I was there. His partner caught a few more crappies, fishing the same water, but did not hook a bluegill.

To fish the micro-jig, pinch a splitshot about eight inches above the jig head. Adjust the bobber so that the jig rides about a foot off the bottom. Cast it out and let the jig sink, allowing a second or two before starting a slow retrieve. When panfish are actively feeding, a simple slow retrieve that produces a gentle wake is all that is required.

However, when panfish are finicky, short twitches and jerks that make the bobber "pop" often trigger a strike.

Small minnows, no larger than 1 1/2 inches, fished on a bare jig head are also effective. Hook the minnow through the lips. Use this rig with or without a bobber that's just big enough to stay afloat.

Bobbers make all the difference when fishing for sunfish in weeds. Bluegills of-

Mike Kaufmann

Crappies and bluegills school and move around a lot. They can be caught in great numbers this time of year, when they move into shallow water to spawn. If you catch one, you can be sure there are others close by.

Carolee Boyles-Sprenkle

ten hold in pockets and channels cut throughout the submerged weedbed. Using a small, clear bobber lets you put your jig into the water above the weeds.

This technique worked well for me in Struble Lake in Chester County. Struble has an ample population of hand-sized bluegills, but catching them becomes a challenge once the south shore becomes choked with weeds.

A method I learned from "bream" fishermen down South is to use a short-handled rake to open holes in the weeds. My hosts would open a dozen holes in the surface mat. After allowing time for the water to clear, they would drop tiny jigs into the holes and haul out as many as a half-dozen slabsides before moving on.

If fishing with the bobber is slow, try removing the float. This requires concentration and a thin, highly visible line that you can see. Cast out and allow the jig to sink to the bottom. Watch the line closely and maintain a tight line because crappies often strike while the jig is falling. Raise your rod tip slightly to pick the jig up off the bottom and reel in the slack. When fishing rip-rap or rocks, try hopping the jig back.

Crappies frequent areas around rocks, rip-rap, bridge pilings, piers, brushy areas, stick-ups and submerged trees. When the crappies are running, fishing from shore is productive. It usually doesn't take long to land enough crappies for a fish fry or two. To find crappies, work along the shoreline starting where the water is about 4 feet deep. In stable weather, you generally won't have to go far to find crappies, but when a cold front pushes through crappies move out and hold on a dropoff.

That's when a sonar-equipped cartop boat becomes an angler's best friend. With most lakes limited to 10 horsepower or electric motors only, the ideal panfisherman's rig is a 14-foot aluminum V-hull with a 10-horsepower outboard and a stern-mounted variable speed electric motor.

A liquid crystal graph to help find submerged pilings or the Christmas trees sunk by the local bass club, an anchor, a brush clip for tying up to tree tops, and a set of oars, not only for emergency transportation, but to pole around in shallow inlets so as not to spook fish round out the rig.

On a liquid crystal screen, schools of crappies often show up as a growth protruding from the slope of the dropoff. When fish hold to structure like this, drop a marker buoy and move your boat upwind. Point the bow into the wind. Use the trolling motor to hold the boat in position while casting to the school. Holding the boat over the school usually turns out to be counterproductive.

If your boat does not have a livewell, try one of the cooler conversion kits on the market. It not only keeps your bluegills or crappies fresh, but it also makes a dandy bait bucket. The boat I usually panfish out of does not have a livewell, and if I'm fishing artificials for the most part, I simply take along my fish cooler filled with ice. After all, spring is a time of optimism.

Panfish Hotspots

Northwest

Pymatuning Lake, in Crawford County, is a 13,920-acre lake bordering the state of Ohio. Crappie fishing reaches its peak from mid-May to mid-June. White bass and bluegill fishing is also good. There is a 10-horsepower limit.

Presque Isle Bay offers some of the state's most diverse panfishing. Bluegills, crappies and perch. There are no horsepower restrictions.

Tionesta Lake in Forest County is a 480-acre Corps of Engineers impoundment located just south of Tionesta. Panfishermen concentrate their efforts from the Nebraska Bridge to Lackey Flats. There are no horsepower limitations.

Tamarack Lake is a 562-acre Fish Commission lake, located near Meadville in Crawford County. Crappies and bluegills are the main attraction here, but don't overlook the bullheads. Electric motors only.

Northcentral

Blanchard Lake, also known as Sayres Dam, is a 1,730-acre Corps of Engineers flood control impoundment. Good panfishing in coves and above the causeway. No horsepower restrictions.

Rose Valley Lake is a 396-acre Fish Commission lake in Lycoming County. Northcentral Assistant Supervisor Bill Hartle says panfishing at Rose Valley is one of the region's best-kept secrets. Electric motors only.

Northeast

Mauch Chunk Lake, located near Jim Thorpe in Carbon County, offers excellent panfishing. It's electric motors only on this 330-acre Fish Commission lake.

Lake Jean, a 254-acre lake in Rickett's Glen State Park, is a favorite with Luzerne County panfishermen. Electric motors only.

Shohola Lake is located west of Milford in Pike County. Better known for its largemouth bass, this 1,100-acre impoundment offers good perch and crappie fishing. Electric motors only.

Southwest

Gordon Lake, with 275 acres, and adjacent 263-acre Koon Lake are favorites with Bedford County anglers. Both lakes are restricted to shore fishing only. Koon Lake is also stocked with trout.

Keystone Lake in Armstrong County, with 1,000 surface acres, has both bluegills and crappies. There is a 10-horsepower limit here.

Southcentral

Long Arm Dam is a 240-acre lake near Hanover in York County. This relatively shallow lake holds good number of hand-size bluegills.

Laurel Lake in Cumberland County's Pine Grove Furnace State Park offers perch and bluegills. Laurel Lake is also heavily stocked with trout. Electric motors only.

Raystown Lake, with 110 miles of shoreline, is an excellent bluegill and crappie fishery. There are no horsepower restrictions on this 8,300-acre Corps of Engineers impoundment.

Southeast

Middle Creek Dam, located at the Middle Creek Waterfowl Management Area in Lancaster County, is well known for crappies, but slab-sided bluegills are also caught.

Pinchot State Park Lake in York County offers good panfishing. Electric motors only on this 340-acre lake.

The Conowingo Pool on the lower Susquehanna River is a well-known crappie haven. With 9,000 acres of water, Conowingo has no shortage of places to cast a jig.—*CD*

A Hard-Head Popper

by Chauncy K. Lively
photos by the author

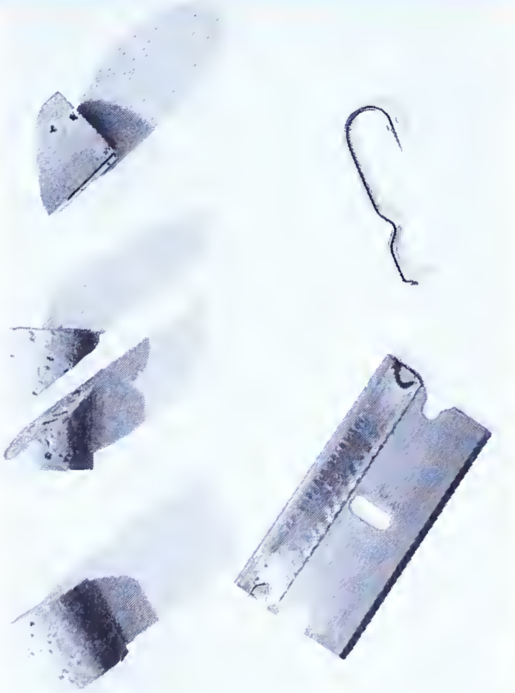
For many years anglers have argued over the merits of hard-bodied bass bugs and those with soft, yielding bodies of clipped deer hair. Soft-body advocates say that bass quickly spit out bugs with hard bodies, but are apt to hold soft bugs longer, improving one's chances for successful hooking. I've had long experience with both types and frankly I find no advantage whatsoever in the hooking advantage of one over the other. In fact, one of the biggest largemouth bass I've caught was taken on a hard-body bug that was sucked in quietly—much as a brown trout sips drifting spent spinners.

George Aiken and I were fishing a pond in Washington County on a bright, crisp November day. The water was cold, and as expected, the bass were inactive. But it didn't matter; it was a great day to be out and it would be the last opportunity to use the big fly rod before winter set in. George chose to fish a light outfit for bluegills and it was a wise choice. Many slab-sided panfish came to his net that afternoon.

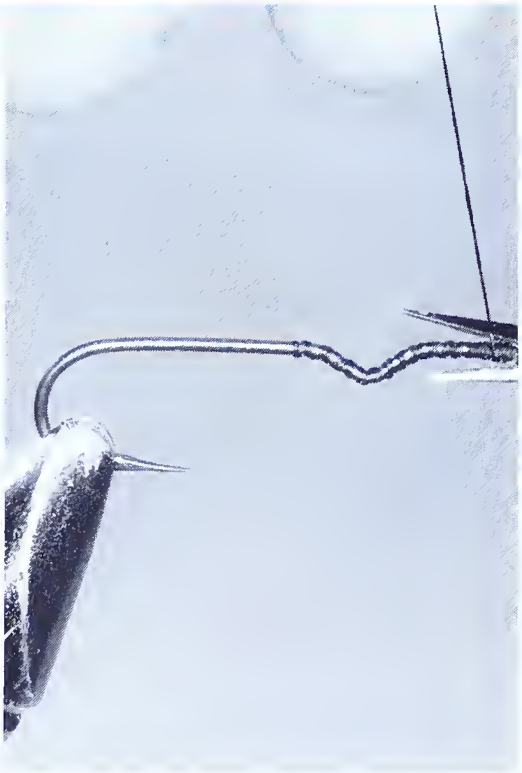
We fished around the shoreline and when we arrived at the lower end of the pond I spotted an overflow pipe that jutted out of the water. It made an interesting target and I let fly. The cork popper hit the pipe with a resonating *ping* and fell to the water. A splash to the left diverted my attention and I looked away to watch George land a big bluegill. When I looked back, my popper had disappeared.

Cautiously I raised my rod tip and felt a mighty surge as the head of a large bass came out of the water, shaking violently, with mouth agape. For a little while we had a real street brawl, but eventually I netted him, wrapped in a blanket of weeds dredged from the bottom. Compared to the bluegills we took from that little pond, he looked like the Loch Ness monster. I've no idea how long the bass had held the painted cork popper before I came to my senses and reacted, but it must have been at least four or five seconds—more than ample time to eject it if he had been suspicious.

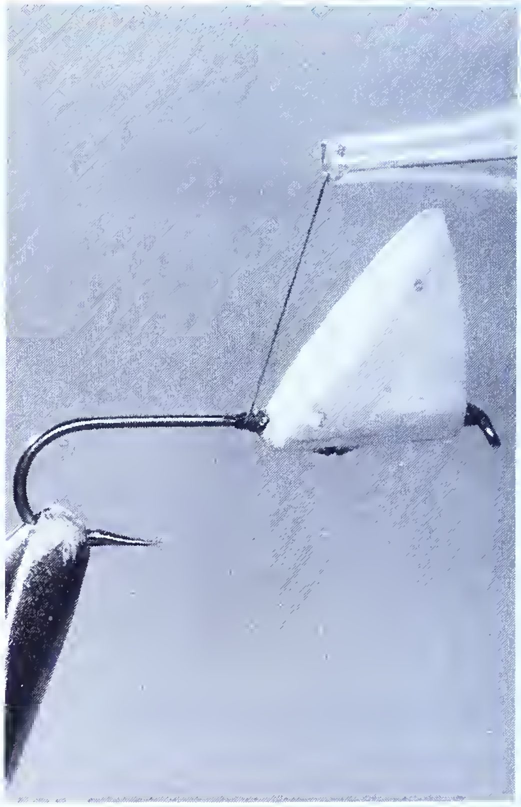
"Castability" is a quality most bass buggers look for in their popping bugs. A bug that is too heavy or too bulky may make



1 *Begin with a cork cylinder that you cut diagonally along its length. Now you have two similar bodies. Cut a 1/16-inch slot for the hook on the underside of the body.*



2 *Tie in black 3/0 monocord thread behind the eye of the hook and wrap in spaced turns back to a point behind the kink. Then reverse directions and wrap to the eye. Whip-finish and cut the thread.*



3 *Fill the body's underside slot with cement and press the body onto the hook. When dry, tie in thread snugly against the rear of the body.*

casting a miserable chore and take the fun out of fishing. Those of us who dress our own bugs can maximize their castability through good design and the judicious use of materials.

The hook is a major contributor to the weight of a popper, so its selection is critical. Many commercially made bugs are dressed on large hooks of heavy wire, better suited to "jugging" for large catfish in the Mississippi River. Fortunately, well-designed hooks of relatively fine wire and long shanks are made expressly for popping bugs. They are manufactured with a kink in the shank to prevent the body from twisting. Some examples are Mustad's 33903 and 3984. These hooks are known as "humpshank" hooks, and they are generally available from dealers of fly tying materials. However, if you can't locate humpshank hooks, you can use regular straight-shank streamer hooks if you don't mind taking some extra time. Simply set the hook in the body with epoxy cement and let it dry overnight. Avoid using the five-minute epoxy.

Popper bodies are commonly made of cork, balsa wood or foam plastic, with cork perhaps the most popular material. Cork is easy to shape with a razor blade and sandpaper. It floats well and is reasonably durable. To reduce bulk to a minimum I select a cork cylinder (about a 1/2-inch in length and a 1/2-inch in diameter for a size 6 hook) and slice it in half along the diagonal of its length. This gives me two slanted-back bodies with one-half the bulk of the original cork cylinder. The face of the bug—its popping surface—remains the same.

Viewed from underneath, the body's outline is as broad as the original cork. Thus, I have achieved the illusion of bulk with half the weight. I cut a 1/16-inch slot in the underside of the body to place the hook's shank. The slot must be accurately centered from the front to rear. Otherwise the bug will flip when retrieved because of an off-center pull.

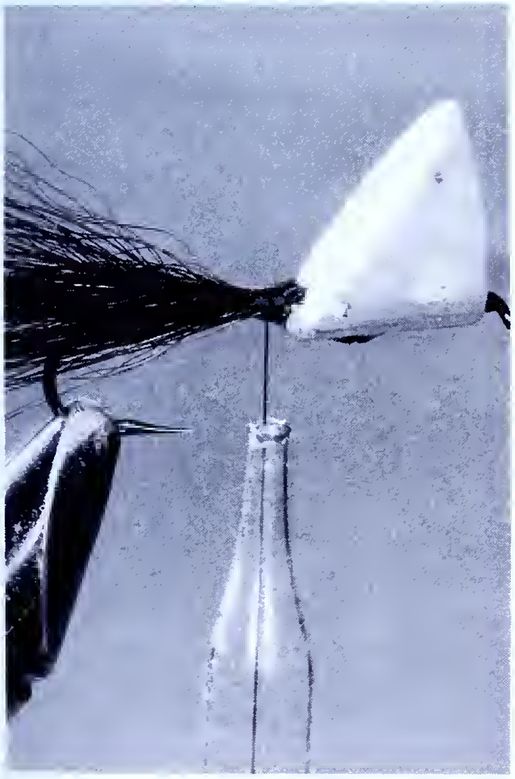
It is rare to find perfect, unblemished corks. Most have small pock marks, but these may be eliminated through the use of wood filler and sanding. Before cementing the cork to the hook, I cross-wind thread over the portion of the shank to be occupied by the body. This roughens the smooth hook and provides a better gripping surface for the cement.

Various types of appendages may adorn the end of the popper. A common style has a hackle wound at the rear of the body with either a bunch of hair or a pair of hackles extending streamer-like behind. One of my favorite poppers has stiff legs (generally of skunk or bear hair) extending out the sides. When the bug is activated, the stiff legs bend back and return in a kicking motion. Soft deer body hair legs should be avoided because they react limply when activated. However, bucktail hair is stiffer and serves satisfactorily as legs.

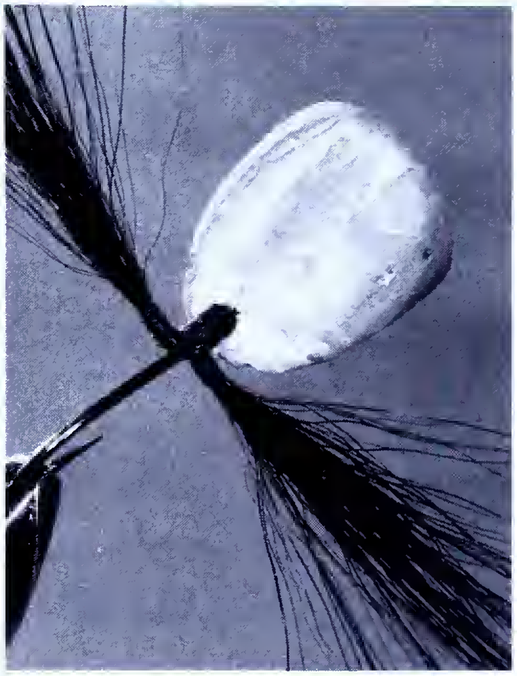
Until recently I used lacquer or enamel to paint popper bodies, but lately I've tried acrylic paints and they've become my favorites. They are available in just about every color imaginable at arts and crafts stores. Using water for brush cleanup, acrylics are easy to use. These paints commonly show a flat finish when dry, but if you prefer gloss, apply a glaze of clear nail polish to the painted body.

The hard-head popper described here has black legs, a spotted black body and yellow face. However, your imagination is the only limit to the color combinations possible. Bass don't seem to be fussy about color and the possibilities are many.

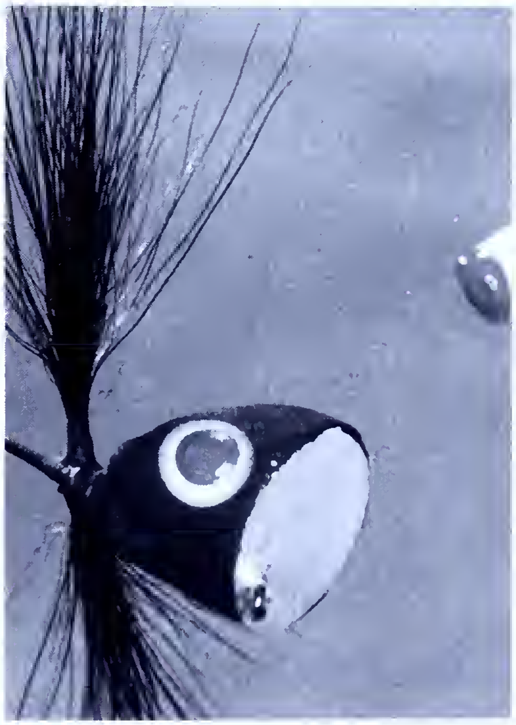
The hard-head popper is equally effective for largemouth and smallmouth bass, as well as any panfish that can get its mouth over the hook. It has also taken pike while fishing the Allegheny River for smallmouth. For smallmouth I prefer size 6; for largemouth, size 4 or 2.



4 *Cut a bunch of skunk or black bear hair a little longer than the overall hook length. Tie in the hair behind the body.*



5 *With a dubbing needle separate the hair into two equal parts and wind between them with figure-eight turns to make the hair stand out at right angles. Then secure this position by winding the thread about 1/8-inch around the base of each bunch. Then bring the thread forward of the hair and whip-finish.*



6 *Paint the popper body. When it's dry, apply the eyes and body spots with the end of a dowel. Optionally, after drying, apply a glaze of clear nail polish.*

THE WORTH OF A STOCKED TROUT

BY LINDA L. STEINER

What's a stocked trout worth? That's an easy question—just ask the Fish Commission. After all, they're the folks who raise them. I asked. In 1990 the Commission stocked 5.2 million "keeper-size" adult trout in the streams and lakes of Pennsylvania. Each typical stocked trout, 10.1 inches long, costs 90 cents...wholesale.

From egg to creel, the Fish Commission has streamlined and perfected its operation so that each scrapping 10-incher that is caught on opening day runs less than one dollar to put in the stream. If an angler catches his limit that day, he's already well on his way to making back his license investment. If he catches more, he'll find the cost of those trout has risen by the amount of the fine he'll have to pay.

But is this really what we mean by the "worth" of a stocked trout? Isn't a stocked trout worth more than the price of producing and delivering it? Of course it is. The value of a stocked trout to the angler, and to the rest of Pennsylvania, is far greater than the small change the fish represents in the creel.

Much of that worth can be translated into hard currency, "coldwater" cash. What do stocked trout do for the economy of Pennsylvania? The health of Pennsylvania's economy translates into how much we have in our pockets to buy the things we need and do the things we want, like fishing. In that way, stocked trout perpetuate the sport that catches them.

Fish Commission surveys show that two-thirds to three-quarters of all Keystone State anglers go out after trout at least once a year. Assuming that for some that one day, probably opening day, is also the only day, a conservative estimate would be that half the fishing license buyers are serious trout anglers. Last year that meant 650,000 persons, not counting non-license-buying children and young teens who also cast lines in the water for salmonids.

There may be a handful of wild trout purists who claim they never, ever fish for stocked trout, but I'm discounting their number because I believe it is very small. Even those of us who appreciate the experience of wild trout fishing occasionally succumb to the extra fun provided by stockies.

Therefore, it's fair to assume that nearly all Pennsylvania trout fishermen are primarily Pennsylvania stocked-trout fishermen. And why shouldn't they be? The stocked fish is the backbone of trout fishing recreation in Pennsylvania, a ball to catch, and a booster of state and local economies.

Economic effect

Let's look at some figures that the Fish Commission provided, the most impressive one first: The economic worth of fishing in the state of Pennsylvania is over $1.3 billion per year. To picture this amount, imagine a pile of money you could drown in.

This figure does not represent simply hooks and bait, though Pennsylvania anglers spend plenty on that. The $1.3 billion reflects how buying the many products and services anglers use in pursuit of their sport filters throughout numerous facets of business in the state. It also represents how much poorer Pennsylvania would be without angling. Because only half of the fishermen are after trout, that's still in excess of $650 million by which trout anglers enrich the economy.

To figure what each stocked trout is worth to Pennsylvania's economy, I divided $650 million by the number stocked and got about $125 as an average value. This figure should make every youngster with a trout hold onto his stringer tightly, and most adults as well.

Stocked trout help pay taxes, too, generating at least half of the $55 million that the Commonwealth receives in sales and income taxes related to angling. Direct expenditures from all types of angling and buying tackle, bait, lunch, gas and lodging, is figured at almost $770 million a year. Again, half is due to the stocked trout. According to this line of thinking, every one of us spends $600 a year fishing for stocked trout in Pennsylvania. Of course, how lucky or skillful a trout fisherman is determines how much each trout he caught costs him. Divide your season total into $600 and see how much you paid for angling enjoyment per fish.

The doubters should try writing down everything they buy in preparation for, during, and as a follow-up to their next fishing trip. Don't forget such non-angling but trip-related expenses as camera film, souvenirs, clothes, snacks and tips. It's easy to see how the money spent on trout fishing is dispersed throughout a community, and not just spent at the local sporting goods store. Some of that money may even be trickling back to you in your paycheck. You can go out and spend it on angling all over again and not feel guilty.

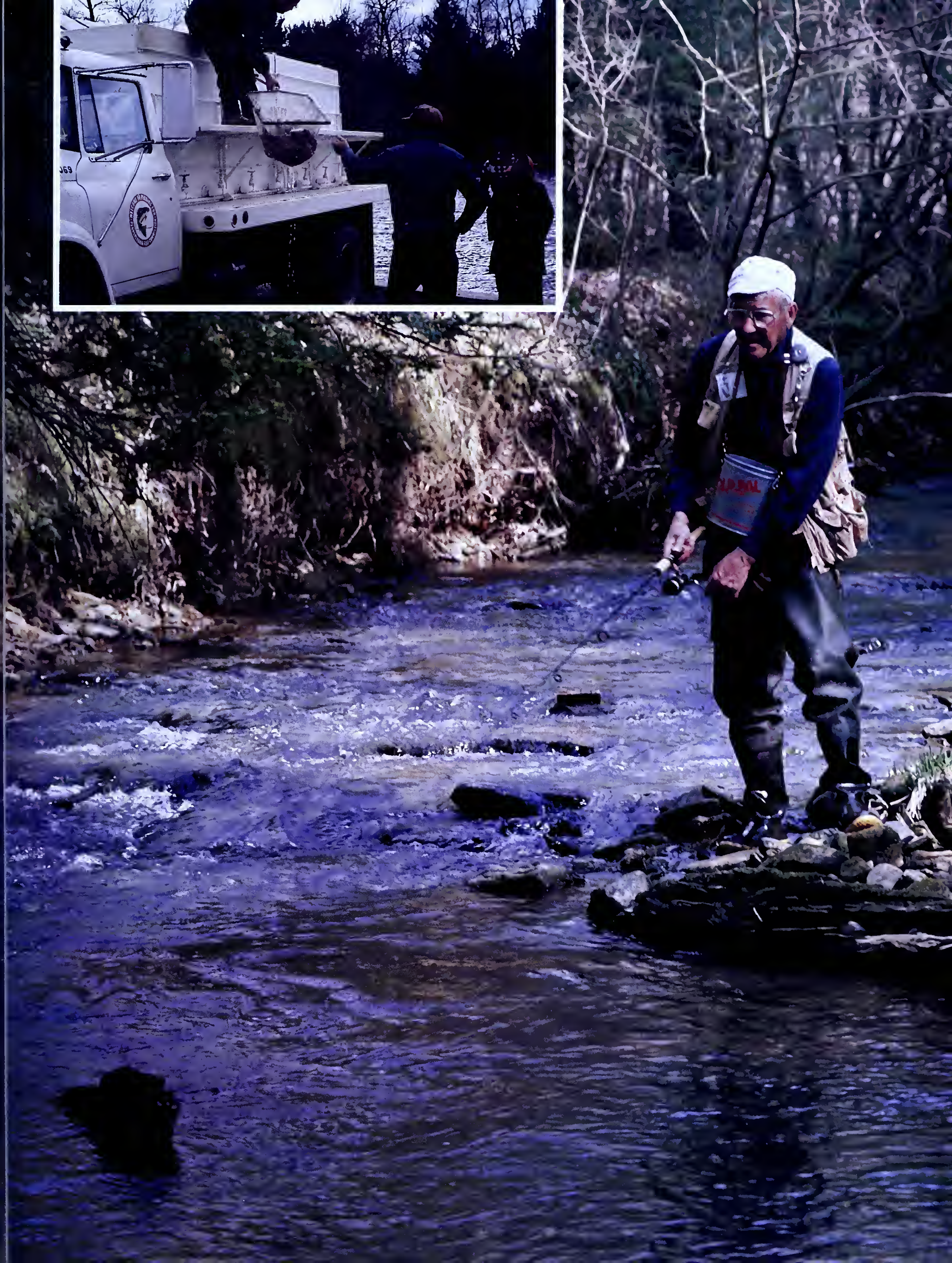
Disraeli said, "There are lies, damned lies ... and statistics." "The survey says...", but can you believe it? What would happen if you could do the survey and gather the facts for yourself?

Expenditure survey

Recently, I was involved in an informal (and unscientific by professional standards) survey of trout anglers' expenditures. The Fish Commission had designated a portion of Oil Creek, Venango County, as delayed harvest, artificial lures only (DHALO). The Trout Unlimited chapter in which I'm involved had supported the regulation change and wanted some idea of what economic effect it was having on the community.

The chapter believed that the new DHALO stretch would attract fishermen from all over western Pennsylvania, including Erie and Pittsburgh, and bring in Ohio anglers as well. These tourist-fishermen, or fishing-tourists, should be contributing substantially to the county's economy. But that was all

Linda L. Steiner


OLD PAL

supposition, of little use if someone said, "Prove it!"

We designed and implemented our own angler survey, making questionnaires available to fishermen at Oil Creek Outfitters, a fly shop and gathering place for those entering or leaving the DHALO area. So far, 35 persons have taken the time to fill out the form, not a big sample but enough to see a trend.

The first survey item was "town and state you call home." As expected, we found that anglers on the DHALO section of Oil Creek were from the local area, Pittsburgh, Erie, Ohio, and even the eastern parts of Pennsylvania. The survey also asked how much anglers spent on their fishing trips, in several categories.

Anglers were queried whether they were staying overnight, and the cost of their accommodations. Those who stayed answered that they were spending $30 to $40 a night for motels, and $10 to $15 for campsites. Concerning meals, anglers said they were paying from $5 to $50, with an average of about $20. This area has very reasonable food prices, and you can still find the "99-cent breakfast special."

We also asked if anglers would buy any sporting goods while they were in the area. Answers ranged from "two or three dollars," to over $100. I had trouble believing that anyone could get out of a fly shop for only two dollars. The average tackle purchase was $35. As for transportation expenses, mainly gas, that cost $25 per trip. Incidentals, souvenir T-shirts, snacks and such were around $15.

When everything was tallied, it appeared that anglers spent $90 to $130 on each trip to Oil Creek's DHALO area, with an average figure of $110. That doesn't mean everyone spent that much, or a lot of better halves may be making their mates stay home. It's simply a formula dividing the highs and lows reported.

The Oil Creek special regulation fishing area is located within Oil Creek State Park. From the counts the state park staff took, 5,000 angling/days were tallied on the stretch this year. Professional studies show that in Pennsylvania, an angler/day is worth $40 to the economy. That predicts anglers visiting the Oil Creek DHALO area should be contributing at least $200,000 directly to the local economy.

Comparing that to our amateur survey, I found this: Figuring the average trip as two days, and dividing the $110 in half, anglers at Oil Creek spent $55 per angling day. This figure is a little high, but remember that the survey forms were at a tackle shop, where people came to spend money. Still, our results tallied amazingly well with what the pros found.

Some $275,000 added to the Venango County economy by just the 1.5 miles of the Oil Creek special regulation stretch is not bad. Venango County has 100 more miles of stocked trout streams that were not included in the survey. These also add their share to the economic well-being of all of us who live there.

After looking at the survey and whistling appreciatively over the result, I wondered if this figure wasn't too high, although the individual components appeared reasonable. But an article in *Rod & Reel* magazine in

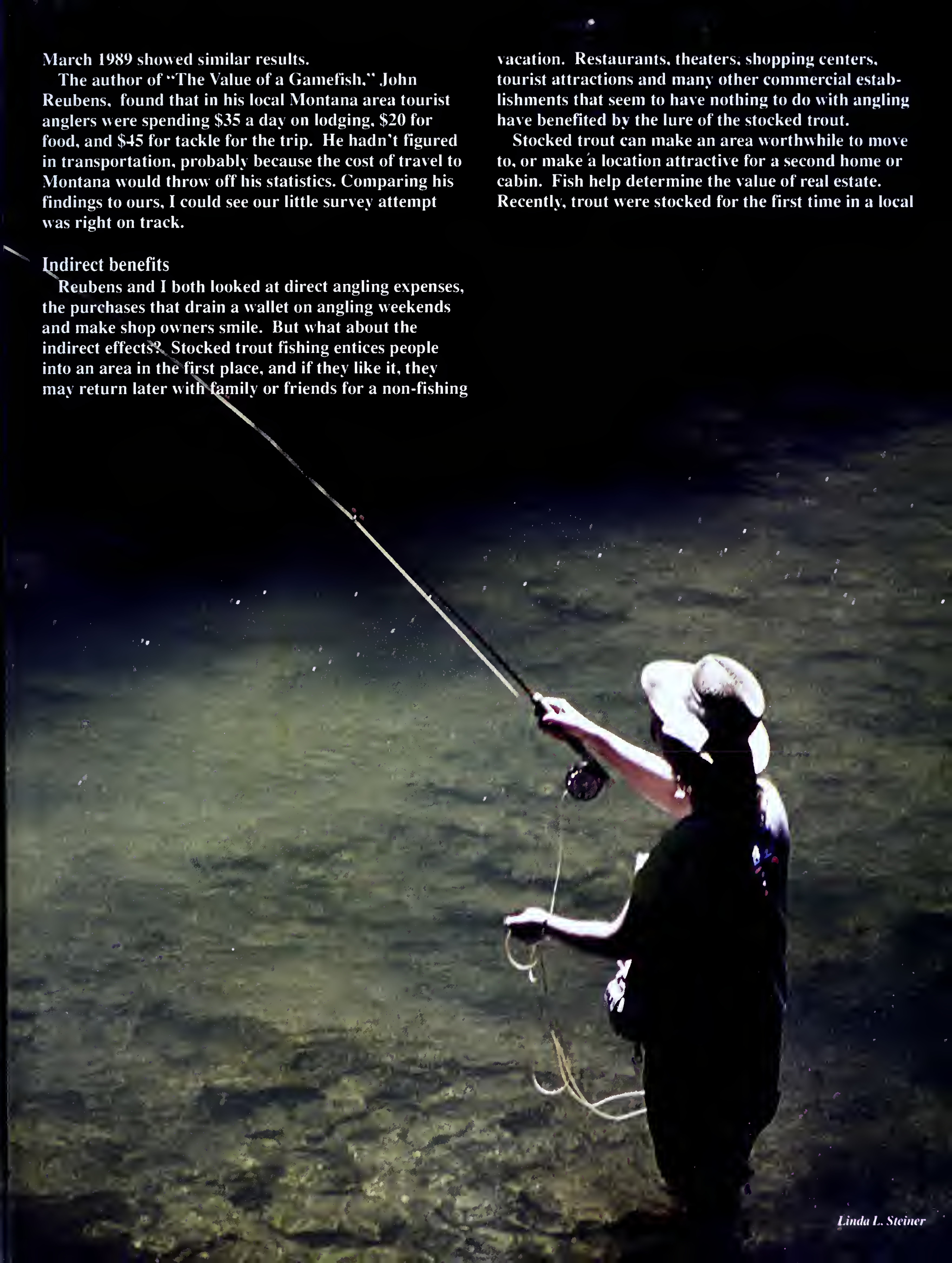
March 1989 showed similar results.

The author of "The Value of a Gamefish," John Reubens, found that in his local Montana area tourist anglers were spending $35 a day on lodging, $20 for food, and $45 for tackle for the trip. He hadn't figured in transportation, probably because the cost of travel to Montana would throw off his statistics. Comparing his findings to ours, I could see our little survey attempt was right on track.

Indirect benefits

Reubens and I both looked at direct angling expenses, the purchases that drain a wallet on angling weekends and make shop owners smile. But what about the indirect effects? Stocked trout fishing entices people into an area in the first place, and if they like it, they may return later with family or friends for a non-fishing vacation. Restaurants, theaters, shopping centers, tourist attractions and many other commercial establishments that seem to have nothing to do with angling have benefited by the lure of the stocked trout.

Stocked trout can make an area worthwhile to move to, or make a location attractive for a second home or cabin. Fish help determine the value of real estate. Recently, trout were stocked for the first time in a local



Linda L. Steiner

stream that had recovered from years of mine acid pollution. A landowner who lives along the creek came outside to watch and was overheard to say, "Yesterday I figured I lived on a polluted stream. Today I own a house on a trout stream. What's that done for my property's resale value?"

Just what is the stocked trout worth in real estate sales? Realtors I interviewed were reluctant to give a dollar figure, noting that any land price is determined by how badly the buyer wants it and how eagerly the owner wants to sell. They did say that having access to a trout stream is an excellent selling point for a property, and a condition that is increasingly asked for by potential purchasers. Streamside homes are easier to sell and have traditionally brought more money.

Having fishing in your own backyard can be the "deal clincher," and such property attributes are expected to have an increasingly important market effect in the future. Right now, I was told, a home on a fishing stream will bring "conservatively an additional 10 percent when its owner sells." If you buy a $50,000 property, that's $5,000 for stocked trout alone, but to a really avid angler, it's worth every penny.

Prosecutions

With visiting angler money pumping up local economies and trout increasing real estate values, it's common sense to keep streams clean enough to stock hatchery trout, as well as preserve the exceptional water quality of native trout streams. But what happens when trout water is polluted? What's a trout worth when it comes to computing the seriousness of the offense?

When there is a pollution, the Fish Commission includes in its prosecution of the responsible party a bill for the fish killed. For trout, stocked or wild, that is determined on a sliding scale. Rates currently range from 55 cents for fish up to six inches, to $22 apiece for lunkers 28 inches and over. A 10-inch stocked trout is $1.50. Pollutions can kill thousands of trout, so the bill can mean a big expense to the violator.

In one case here in Venango County, the sentence handed down to the person who caused a major gasoline spill in Cherry Run, a small but productive native trout stream, included a hefty restitution for fish. The kill was almost entirely trout, of all sizes, and the total owed to the Commission for their destruction amounted to nearly $7,500. If the pollution had been in one of the nearby stocked trout streams, the cost would have been just as high, and justifiably so, considering the loss of recreation involved.

Trout in a stream make it economically unfeasible to degrade that waterway, and not just because there are stiff fines involved. The upbeat economic tempo that trout create has a down side as well. What happens when pollution takes the trout away or prevents the Commission from stocking that waterway?

Everyone in a community who depends in some part on money generated by trout angling suffers financially if the recreation is diminished or destroyed. The survey facts and angler counts show it's worthwhile monetarily to Venango County to keep Oil Creek capable of holding trout, and correspondingly, the other local trout streams as well.

Though not usually considered in this way, the stocked trout win friends and influence people on behalf of clean water. The army of anglers that lines the banks opening day is a legion at ready for fighting pollution. Their buying power in pursuing the sport, purchasing everything from hooks to hoagies to houses, gives them muscle to determine the fate of their favorite stream or lake.

Ken Hunter

Unseen worth

Though there are 650,000 trout fishermen on the front lines in Pennsylvania, there are millions in the background with jobs in service and manufacturing, whose paychecks and family happiness depend on keeping waters clean enough for trout and anglers. When trout water is threatened by proposed mining or polluting industry, the new jobs that will be created cannot be the only economic factor considered. There is money already entering the community that will disappear if the fishing is lost.

By investigating the unseen worth of stocked trout, especially their economic advantages, I don't mean to imply that hatchery-produced fish should be placed in waters that already have a population of native trout, in the interest of making money. Streams in which trout can naturally reproduce are too special and too rare to tamper with, and likely to become more so in the future.

A waterway must have just the right combination of pristine characteristics to support a healthy reproducing trout population. Such an exceptional situation shouldn't be interfered with by the addition of stocked fish. But there are many more streams in the state, which, though capable of holding trout, don't meet the criteria for their reproduction. These waters add to the economic and recreational well-being of Pennsylvanians when they receive hatchery fish.

In Pennsylvania, stocked trout fishing makes more than an economic ripple. If the money spent by trout anglers were traced in its flow from hand to hand, there are very few of us who wouldn't get wet in the splash.

Regulations and You!

by Dennis Guise

When you think of fishing and boating, you probably conjure up visions of another great day on the water catching fish or enjoying your boat. Most anglers and boaters know that fishing and boating are subject to regulations, and the vast majority do their very best to comply with them. But did you know that the regulation process is a two-way street? The Fish Commission wants you to know about regulations and gives each licensed angler and registered boater a summary of the laws and regulations applicable to their sport. And the Fish Commission wants to know what you think about its regulations.

Some of the regulations in your regulation book were first suggested by anglers and boaters just like you. Special fishing and boating regulations are often suggested by people who fish or boat on the waters in question. If you have an idea for a regulation, it's easy to make a suggestion. Just write to the Executive Director, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Whenever the Fish Commission formally proposes a new regulation, whether as a result of a public suggestion or after a staff initiative, the Commission wants to know what you think about it. With a few limited exceptions, such as regulations relating to Fish Commission property or agency practice and procedure, all Fish Commission regulations are first published as a notice of proposed rulemaking in *Pennsylvania Bulletin*.

Pennsylvania Bulletin is published each Saturday by the Legislative Reference Bureau. It contains notices and orders generated by all Pennsylvania agencies. The bulletin is available at public libraries and government offices. Even if you don't read *Pennsylvania Bulletin*, the Fish Commission publicizes its proposed regulations through articles in *Pennsylvania Angler* and *Boat Pennsylvania*, statewide news releases to outdoor writers and media outlets and through information provided to interested angling, boating and sportsmen's organizations.

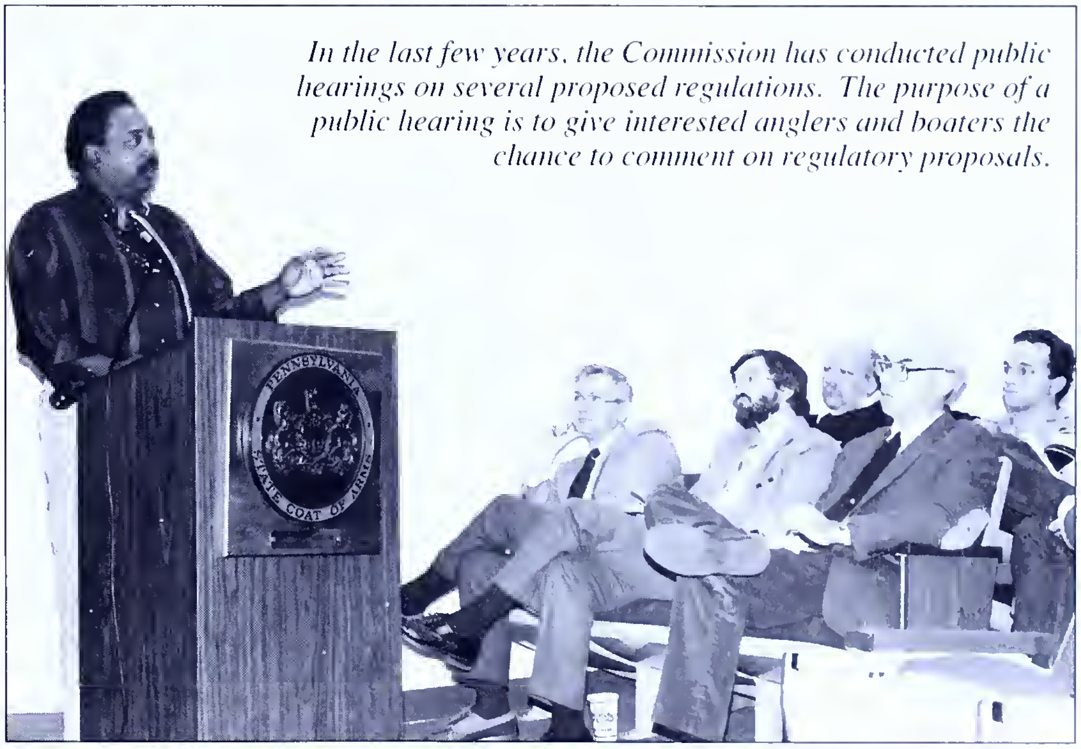
John Plowman

Public comment

The publication of a notice of proposed rulemaking starts the public comment period on a proposed regulation. The public comment period is always at least 30 days long, and it gives interested anglers and boaters the opportunity to submit comments, suggestions or objections about the proposed regulation. The Commission always invites written comments to be submitted during the comment period. When there is significant public interest in a regulation proposal, the Commission may also schedule one or more public hearings to take public comments.

If you hear about a new fishing or boating regulation proposal and want to make comments, you can do so with the assurance that your comments will be read and considered by all members of the Fish Commission. In the case of boating regulations, the comments are also reviewed by members of the Commission's Boating Advisory Board.

The public comment is not the same as a public referendum, however. The Commission does not merely count the comments and make its decisions based on how many comments are on either side of an issue. Most fishing and boating regulations affect tens or hundreds of thousands of anglers and boaters, and even the most controversial regulations usually generate only a few hundred comments. The Commission gives full consideration to these comments, but its ultimate regulatory decision is based on its views of the best



In the last few years, the Commission has conducted public hearings on several proposed regulations. The purpose of a public hearing is to give interested anglers and boaters the chance to comment on regulatory proposals.

John Plowman

interests of the resource and safe boating on Commonwealth waters.

In the last few years, the Commission has conducted public hearings on a number of proposed regulations. The Commission held six public hearings at various locations throughout the state on the proposed trout/salmon stamp regulations. In addition, the Commission has held public hearings on proposals on personal flotation devices for sculls, shells and racing kayaks, on proposed regulations requiring registration of boats using Fish Commission property, and on proposed riverine bass regulation changes.

The Boating Advisory Board also hosted a public informational meeting on the city of Pittsburgh's proposed restrictions on boating on the Three Rivers. A public hearing differs from a public informational meeting in that a public hearing is a more formal and structured proceeding with a verbatim transcript. Information meetings are often held earlier in the regulatory process and frequently involve a more free-wheeling exchange of views.

Public hearings are not public debates. The purpose of a public hearing is to give interested anglers and boaters the chance to make oral comments about a regulatory proposal. Therefore, the Fish Commission staff present at public hearings does not respond to public comments or try to argue with points made by commentors.

Do's and Don'ts

Having conducted numerous public hearings both for the Fish Commission and other state agencies, I've noticed that some commentors are more effective at getting their points across than others. No matter what your position on a particular regulation, your goal when you make comments should be to impress the decision-makers and state your views clearly and concisely. Here are some tips for commenting effectively.

• **Establish your expertise.** The best comments usually start with a brief description of the commentor's interest or expertise. For example, at the recent hearing on riverine bass regulations, some commentors started their presentations by saying "My name is Joe Jones. I've been an avid bass angler for 20 years. I've fished the Susquehanna and western rivers." Such an opening lets the Commissioners know that your opinion is backed by experience.

• **Give reasons for your opinion.** As noted above, public comments are not votes, and decisions are not made merely by counting public statements. When someone just says, "I'm for this regulation" or "I'm absolutely opposed to this change," it really doesn't help the Commissioners and members of the Boating Advisory Board very much. Always tell why you're for something or against it. Thoughtful comments supported by careful reasoning are more impressive than mere statements of position.

Art Michaels

• **Obey the time limits.** The hearing officer at a public hearing will usually announce a time limit for each public comment. At Fish Commission hearings, these time limits are determined by comparing the number of people who have asked to make comments with the total time available for the hearing. If a five-minute time limit is announced, make sure your statement does not go over the limit. The effectiveness of your statement will be diminished if you don't get the chance to make your concluding points because you exceed the time limits.

• **Remember your audience.** A few commentors always seem to forget the audience they're trying to reach. When you make comments at a public hearing, you're trying to get a point across to the members of the Fish Commission or Boating Advisory Board who will be reviewing the transcript. Your target audience is not the other people attending the hearing or even the hearing officer. For this reason you should:

• **Avoid emotionalism.** Commentors who try to play to the audience at the hearing by delivering emotional appeals often fail to impress the decision-makers because comments that may sound good at the hearing fall flat when read weeks later in the transcript. For the same reason, wise commentors also:

• **Avoid attacking opposing viewpoints.** At a recent hearing, one commentor observed that while those who agreed with him were young, fit and trim, those who disagreed were old couch potatoes. Such arguments add nothing to the public record on why a particular regulation should or should not be approved. For similar reasons, commentors should:

• **Be careful with humor.** Remember that the decision-makers will be reading your comments as part of a transcript. Comments that may seem humorous to an audience at the public hearing may not strike a person reading the transcript as funny at all. In fact, statements that you think are hilarious because of your tone of voice or laughter may be incomprehensible as part of a hearing transcript.

• **Summarize your opinion.** It's important for you to let the decision-makers know where you stand. Sometimes good statements fail to make their points because the commentor fails to summarize the position. For this reason, it is always a good idea to conclude a public comment with a statement such as "While the proposed regulation has some good points, I'm against it because it should not be applied to waters in my area." Don't leave your readers in doubt as to where you stand.

Public hearings play an important part in the regulatory process. They give those with a particular interest the opportunity to participate in person and make their viewpoints known. But public hearings are not the only method by which you can provide input to the Fish Commission and its Boating Advisory Board. Written public comments are still the most popular and effective way to let the Fish Commission know your thoughts on particular issues.

The Fish Commission cares about what you think, and as a reader of *Pennsylvania Angler*, we know that you care about fishing, boating and Pennsylvania's precious water resources. So join the team. Don't assume that somebody else will state your point of view. Be a participant in the regulatory process by making comments (pro or con) about proposed regulations.

Dennis Guise is the Commission chief counsel.

The Big-Water Fishing Trip

by Cheryl Kimerline Hornung

Lake Erie was only an hour away. The last time you were there you enjoyed the fine fall coho, chinook salmon and walleye action found along the 42 miles of Pennsylvania's lakefront. You stayed close to shore and fished mainly in the tributaries where the salmon run. Famous for their hard-fighting fish, the tribs draw crowds each fall.

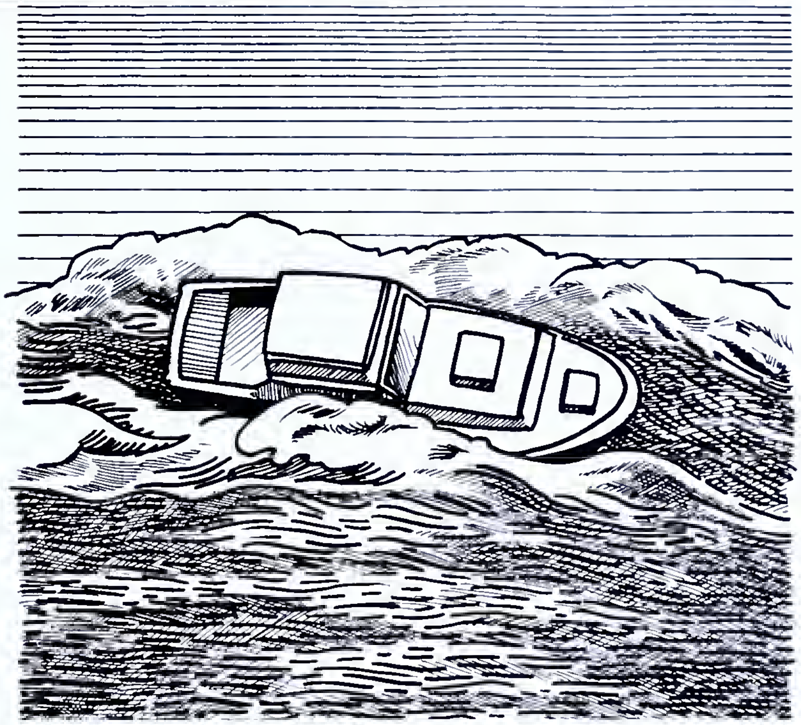
When the lake ice thawed, you were itching to get out and enjoy some early season fishing. Lake Erie in the spring can provide many surprises. It could treat early season anglers friendly with stretches of calm, pleasant fishing, or it could be intimidating with gale-force winds and large white-capped waves. You decided to take a chance and try some action this weekend. When you arrived, the waters were calm and clear. You knew it was going to be a great weekend for fishing!

Finding walleye in Lake Erie is no easy trick, and early in the season, the walleye are located around the numerous rockpiles. You got directions from some local anglers on where the spring hotspots were located. Instead of going out on a charter fishing boat, you launched your 14-foot semivee boat.

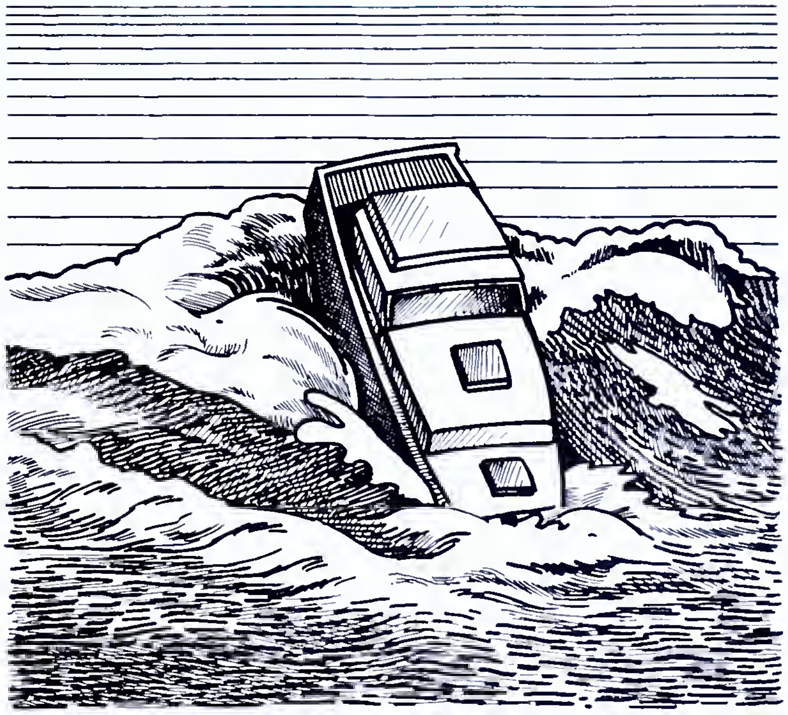
Most of your friends still had their boats in storage, but not you! You were ready for the year-round action that Lake Erie provides. You were proud of your fishing boat. You've had many exciting trips in it. It was a good-sized platform to accommodate you and your buddies. It had plenty of room for two or three people. Anything larger would have been too expensive and hard to trailer. This boat seemed plenty big enough for the regular use it got on your favorite lakes and rivers. It also doubled for a great hunting platform when you exchanged your favorite rod for a gun.

The day looked perfect. The lake was calm and clear. However, the radio was calling for a chance of late-afternoon thunderstorms. The air was still as you launched your boat. Loading it with seat cushion flotation devices, fishing gear and a large cooler, you and your buddy were ready to spend the day out on the water. Lake Erie was the largest lake you'd been on, so you packed extra beverages, food, bait and an extra gasoline can so you wouldn't have to come back to shore early.

You operated your boat out of the launch ramp area and into the bay. The water was glassy with an occasional ripple caused from the light wind. As soon as you left the bay area, you entered small, choppy waves—nothing you couldn't handle. You went about a mile offshore. It was hazy and the shoreline was barely visible. Lowering your anchor off the bow, you were now ready to fish. The air was so heavy and humid, it seemed just to hang on the water. You were thankful for the occasional spray from the waves crashing into the boat.



Broaching



Pitchpoling

illustration- George Lavanish

You had caught a few nice-sized walleye, but now you had a long dry spell. You and your buddy decided to move to a better location, so your buddy pulled in the anchor. As he stood up, a large wave hit your boat broadside. It threw him overboard and swamped the boat. Your seat cushions, tackle boxes and cooler floated out of the boat. The boat slowly rolled over. Both of you clung to the overturned boat still floating. The waves had become larger and the sky had grown darker, but you were too busy fishing to notice it—until it was too late.

Cold water was rapidly numbing your hands and you had a hard time hanging on. You barely remember the charter fishing boat that stopped and made your rescue. It was just luck that they saw you on the way into the bay. You were fortunate to be rescued before the storm really hit.

Weather

Lake Erie's storms are infamous for their ability to catch boaters by surprise. Boaters often wait until the last moment to head to safety. This can be a fatal mistake. Bad weather ruins more boating trips than any other condition.

In a small boat, rainy and cold weather can turn a pleasant fishing trip into a nightmare. If bad weather is a possibility, do not go on the water. Wait for a better day.

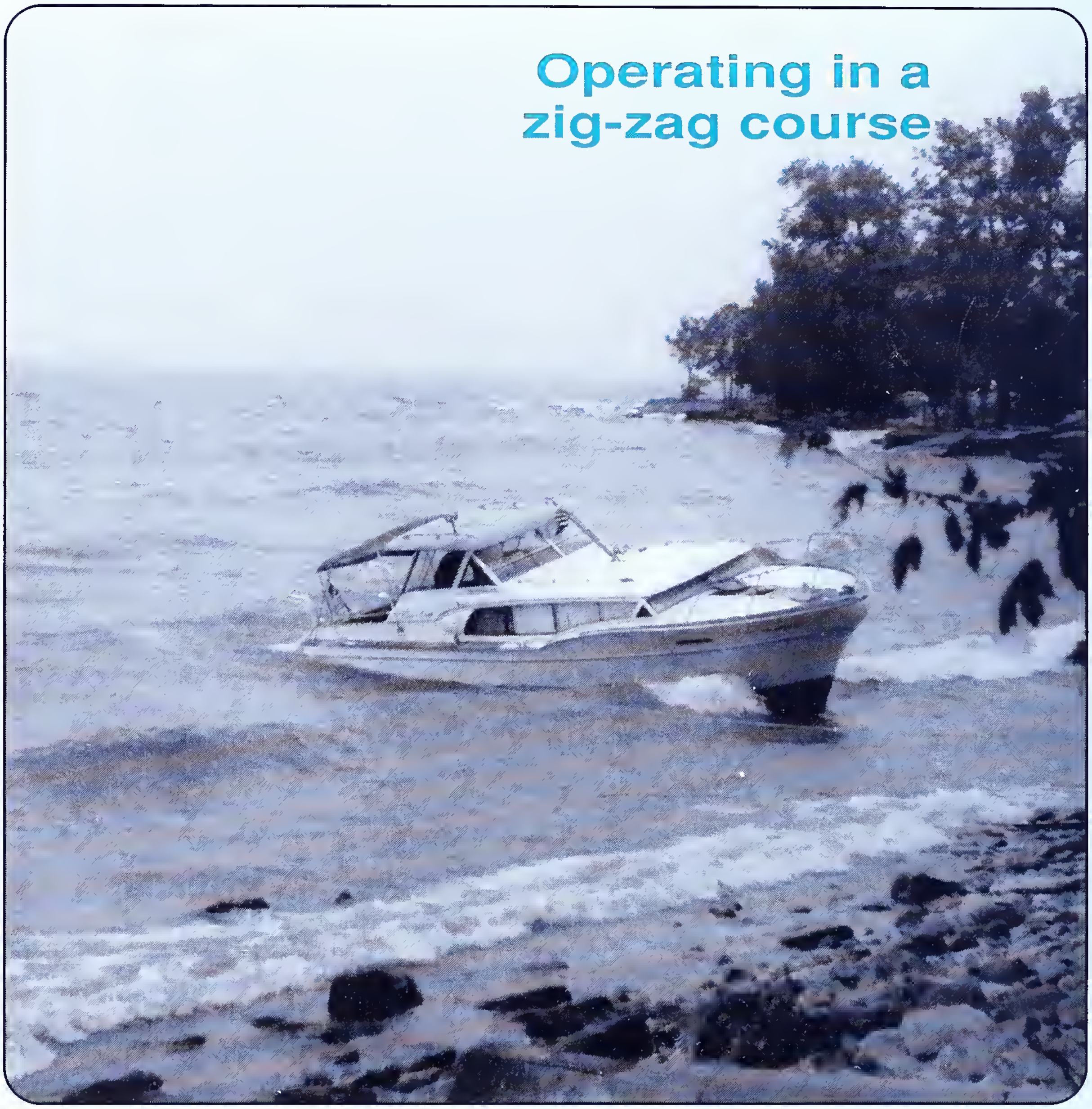
Visibility is often restricted by bad weather. If this happens, slow down! You should be able to stop in half the distance you can see. Post a lookout who should look and listen carefully and constantly. As a skipper, you need to concentrate completely on the operation of your boat. Make sure your navigation lights are on. Sound the required fog signals. If necessary, turn off your boat's motor and listen for other boats.

Try to determine your position as accurately as possible. Then determine the course to your destination. Keep track of your position and estimate your time of arrival. If possible, you might have to operate from one navigation aid to another instead of taking a shortcut across a large, unmarked body of water. If you become lost, anchor and wait for the conditions to improve.

Waves

Waves are caused principally by the wind. Ripples form if a breeze skims the water's surface. If this breeze would stop, the ripples would gradually die down. If the wind exceeds two knots, larger waves are formed. These waves move in the direction of the generated wind. Unlike winds or currents, these waves are not affected by the rotation of the earth. When the wind stops, the waves begin to diminish. This occurs slowly. If the wave has sufficient strength, it travels until it reaches shore.

In open water, waves are generally longer and have more gentle slopes. Boats can usually operate smoothly over these waves. As shore or shallow water is approached, the waves become shorter and steeper. These waves, or swells, as they are commonly called, are the most dangerous. Boats have problems operating over these.


Operating in a zig-zag course

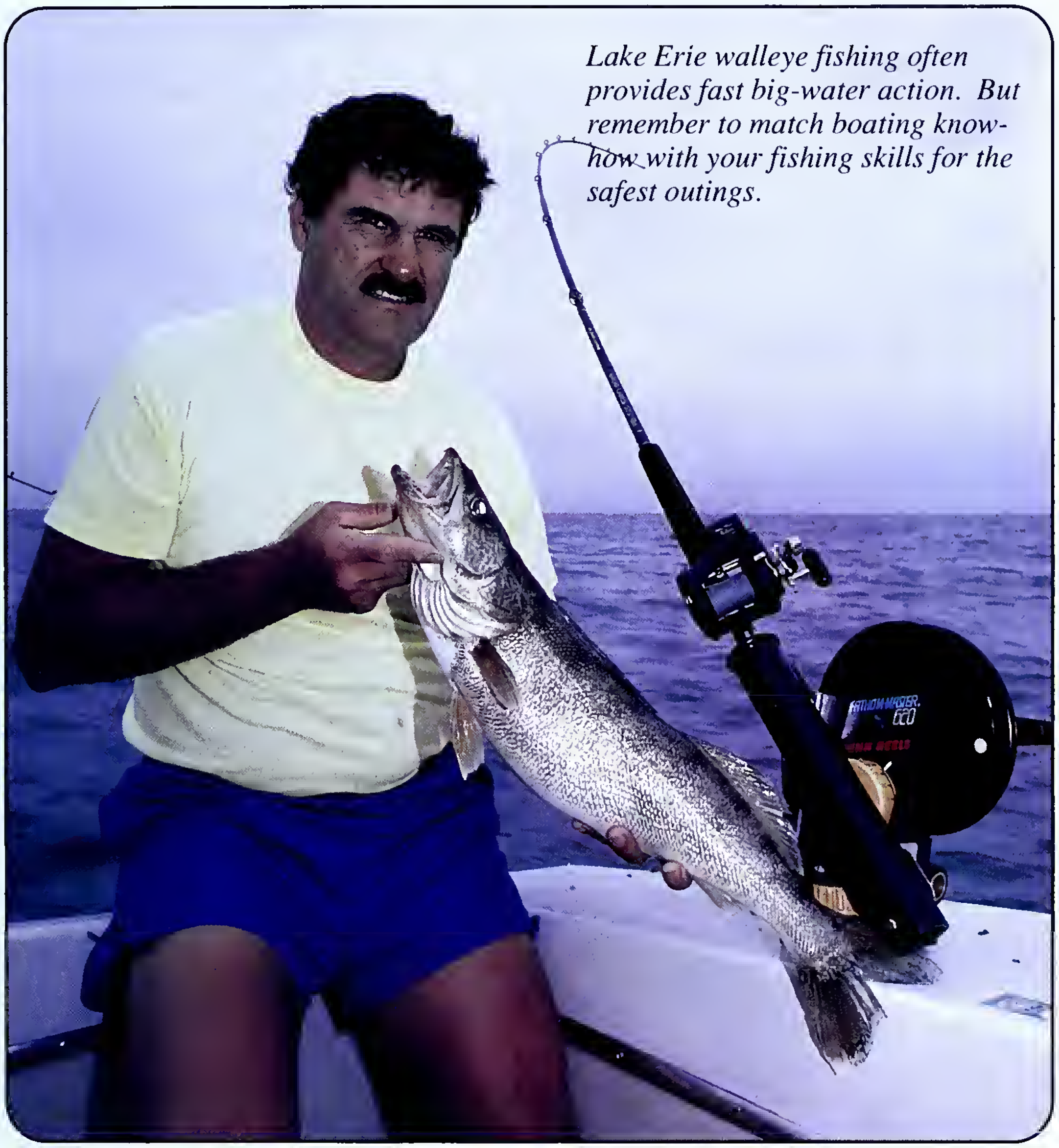
The distance between consecutive crests is called the wave length and the vertical distance between the crest and trough is called the wave height. As waves get closer to shore, they begin to decrease in velocity and increase in height. The crests become sharper and the wave length becomes shorter. The waves begin to "pile up" close to shore. Then the velocity increases and the top of the wave begins to curl and break.

Wind

The part of the boat above the waterline acts as a sail. The wind on this sail affects the steering. Wind from one side pushes the boat sideways through the water, producing what is called leeway. Today, most boats have little of the hull below the waterline to resist this action. This can be corrected by steering more toward the wind and slowly increasing speed. Judging the amount of correction needed to maintain the set course requires experience.

Current

Water moving across the bottom of the lake is called current. The current moves the boat in its direction. The current can move the boat off its course, so the same type of steering correction is needed.



Lake Erie walleye fishing often provides fast big-water action. But remember to match boating know-how with your fishing skills for the safest outings.

Joe Workosky

Operating in rough water

When the weather forecaster predicts high waves or high winds, small-boat anglers should keep off the water. Sometimes a calm lake in the morning will turn into a turbulent lake in the afternoon as the winds increase.

As the wave size increases, the bow of your boat is driven into the waves with increasing force (instead of being lifted up such as in calm water). This causes the boat to take a tremendous pounding. Heavy objects could break loose, serious falls could take place and the boat propeller is alternately submerged and out of the water. This causes the motor to be operating one minute and racing wildly the next.

When caught in any type of rough water (or even just crossing a boat wake), head into the waves at a reduced speed. Slow down. Don't run for cover like most novices will do. By slowing down, the bow tends to lift with the waves. Head into the waves at a slight angle off the bow. Adjust your speed so that the bow on your boat lifts and does not plow into the next wave. Avoid any direction that allows the waves to strike the boat broadside or directly astern. Tacking long distances at a slight angle so the waves strike the bow can be done in extreme situations.

Waves affect the forward movement and steering of a boat. Waves striking the front of the boat slow its speed. Waves striking the stern increase the speed in spurts. When the stern is lifted up on the wave, your power and steering are lost. This is very dangerous. Try to keep your stern square to the waves and try to match the boat's speed to the waves. Ride the back of a long wave below the crest. Use a sea anchor or drogue to slow the speed.

Waves generally cause a boat to seek the trough. This requires the operator to steer to the right or left to try to stay on course. If the speed is reduced, the steering control is reduced and the tendency to fall into the trough is increased.

Broaching, pitchpoling

When a boat operates in the same direction that waves are going, this is called running before the seas or running in following seas. The force of the waves on the transom of a boat can cause the boat to yaw wildly from side to side. The propeller can be lifted out of the water as the stern is picked up by approaching waves. This puts the boat out of control and it could be thrown sideways into a trough. This is known as broaching.

Avoid a broach by controlling yaw at all times. This is done by keeping the propeller in the water by slowing your boat as the waves approach the stern. Allow the wave to pass under the boat. The motor's RPMs are increased slightly until the next wave approaches the stern. A small sea anchor can also be used to make yawing easier to control in rough conditions.

Unless the boat is slowed considerably as waves approach the stern, the vessel can be picked up by the wave and forced down into the trough, burying the bow under water. The next wave could pick up the stern and flip the boat end over end. This is called pitchpoling and it is dangerous. Unfortunately, both broaching and pitchpoling can happen instantly in rough waves of following seas.

Fasten down the hatches

A prudent skipper anticipates adverse conditions and acts on instinct. When in adverse weather, take the following precautions. First, make sure you and all your passengers are wearing PFDs. Instruct the passengers on what is happening and what you are going to do. Make sure they are all sitting low and toward the center of the boat. Reduce speed. Secure loose gear. Check the charts to determine if you are on course. Close the hatches and have the bilges pumping. Lake Erie is no place to take chances.

Get Serious About

I wanted to catch some fish. I had been fishing unsuccessfully for stripers at Lake Wallenpaupack, and I needed something to boost my spirits. After lunch I took a drive and passed an interesting pond. It looked fishy, so I grabbed my ultralight rod, which was rigged with a jig and bobber, and strolled down to the edge of the water.

I cast the jig to the edge of a clump of weeds. As soon as the ripples settled I twitched the bobber and jig. A few seconds later I twitched it again. Just as I was about to twitch it once more, the bobber moved without my help. I pulled back on the rod sharply, but not too hard, and felt the surge of a feisty bluegill.

I caught a nice mess of bluegills and pumpkinseeds that afternoon, and it raised my spirits, which was exactly what I had intended. Sunfish are cooperative that way.

Effective method

When I want to put sunfish fillets in the freezer, I usually rely on a jig and grub fished beneath a float. This method is effective on bluegills and other sunfish in almost any situation or season, including through the ice.

The best way I know to locate sunfish is covering likely water with a jig, grub and float. The jig must be moved slowly because sunfish won't chase a fast-moving bait.

Sunfish

by Mike Bleech

photos by the author

When I want to put sunfish fillets in the freezer, I usually rely on a jig and grub fished beneath a float. This method is effective on bluegills and other sunfish in almost any situation. The jig adds visibility and hook-setting efficiency, and the grub adds flavor.

Most of their natural food moves at a snail's pace. The jig and grub shouldn't be jigged. Picture a wiggly little insect larva. That's about the way the jig should move.

There are a few reasons why this rig is superior to other rigs. The jig adds visibility to the rig, either with a shiny, flashy finish or with bright colors. Most serious sunfish anglers agree that color is important. However, there is no one color or finish that is clearly best in all situations. Red, orange, chartreuse, silver, gold, pink, black, blue, purple, green, yellow, brown and white have all been productive in my own experience and observations.

Hook-setting is much more efficient with a jig—which is a weighted hook—than with a hook and sinker a few inches up the line.

The grub adds flavor, which is the most important ingredient of this rig. Sunfish tend to strike lightly. They can be very difficult to hook if they are any less than very aggressive. The taste of the grub brings the sunfish back again and again if you fail to sink the hook, and the sunfish hold a flavored jig longer than one that is not flavored.

Scents and artificial baits are suitable substitutes for grubs. During the past few years I experimented a lot with artificial lures, and found some to be every bit as effective as real grubs.

The bobber, or float, adds a few advantages: depth, control and sensitivity. Depth of the jig is precisely controlled by the amount of line between the jig and the float. Watching the float tells you exactly what the jig is doing.

I use a pencil float, or any other float that is slender. The weight of the jig holds the float erect. If a fish pulls down on the jig, the float dips down. If a fish takes the jig up, the float lays flat on the water. In either case, I know something has the jig, and I set the hook. This is much more sensitive than trying to feel through the rod or line.

A teardrop jig is the standard sunfish jig. This lure is a piece of lead molded onto a hook in the shape of a teardrop, or flattened teardrop. Some sunfish jigs resemble small spoons with single, firmly attached hooks. Leadhead jigs either with or without plastic bodies are fine. One of my favorites is tied like a fly fishing nymph on a small leadhead.

Sunfish have small mouths. Whichever

The sunfish

The sunfish family in Pennsylvania includes bluegills and pumpkinseeds, which are the main subjects here, and other species that range in size from a maximum of less than six inches to more than 10 pounds.

Largemouth bass are the largest members of the family. Other large members are smallmouth bass, spotted bass and crappies. Rock bass and warmouths are more prone to live among rocky cover, and are popular with anglers along some rivers. They are less colorful than most other smaller sunfish. Some of the smaller species, too small to be significant sport fish, are longear and blue-spotted sunfish. Redbreast and green sunfish are not common throughout the state, but they are available in some spots. They grow to about eight inches, but are usually smaller.

Pumpkinseeds reach a maximum size of about eight to 10 inches. They are probably the most widely distributed sunfish in the state, and in the northeast United States. But they do not contribute a large share of the sunfish kept by anglers because they are usually less than six inches long.

Bluegills are the most desirable of the smaller sunfishes, because they often grow six inches, and they are widespread and abundant. The state record is two pounds, nine ounces. The maximum size in Pennsylvania is generally eight to 12 inches.—*MB* jig you choose, the hook should be small, size 8 or smaller, depending on the hook style.

The bait or fishing method does not mean a thing, though, if you do not get the hook close to the sunfish. Fortunately, this is relatively easy, because sunfish are much more abundant than most other sport fish.

Cover

Generally, bluegills and pumpkinseeds like aquatic vegetation. They are cover-oriented. I have found schools of sunfish around sunken brush piles, but this cover is often dominated by crappies, bass, pike or other larger fish. Look for sunfish in the weed beds, if there are any.

During early spring, look for sunfish in the parts of a lake or pond that warm first. Aquatic vegetation might just be starting to grow. Isolated clumps of vegetation, those few weeds that shoot up first, are like magnets to sunfish. The water might be darker there than in other parts of a lake. Sunfish are active in these places because the food chain gets a jump start in the relatively warm water.

Later in spring, when the weed beds are more developed, fish for sunfish along the weed lines and in open pockets. Sunfish live among the stems and limbs of the vegetation, but you cannot get a light jig through the weeds, nor can you haul a sunfish up through thick weeds on light line. The sunfish won't break the line, but the weeds surely will. Unless you want to use heavy tackle, you must fish through openings in or alongside the weed beds.

Small ponds are a joy to fish because the sunfish are easy to find. They might not be hitting always, but when they are you'll find them, as opposed to big lakes where you might miss them because of the vastness of the water and weed beds.

Locating sunfish

Panfish anglers offer various theories about where in the weed beds sunfish are most likely to be. Sunfish tend to congregate in certain specific places. But none of the theories I have heard, in any practical sense, shortens the process of locating sunfish. Most are based on ideas that are learned after sunfish are located.

The best way I know to locate a sunfish is covering likely water with the jig, grub and float. But the rig must be moved slowly. Sunfish won't chase a fast-moving bait. Most of their natural food, other than small fish, moves at a snail's pace. Hence, the jig and grub should not be jigged in the same jerky way you might jig for bass, walleye or even crappies. For sunfish the jig should merely wiggle. Picture the wiggly, little insect larva you see in a stagnant puddle. That is about the way the jig should move.

Coves on rivers and creeks are spring hotspots. These calm backwater places are often a few degrees warmer than the main channel. The best time to fish them is when the water level is up.

The bobber should move about as slowly as you can reel. A light wind might move the float—and the rest of the rig—fast enough. Cover all the water that can be reached from one position. Then move the boat or walk along the shoreline. A moderate wind moves my boat too fast, so I use an anchor or electric motor to control boat movement and position.

This is a tedious way to cover water, at least when compared to searching for other fish, but I seldom fail to find sunfish this way.

River coves

Another spring sunfish hotspot is coves on rivers or creeks. These calm backwaters are often a few degrees warmer than the main channel. There are a few small coves on the Allegheny River near my home where I catch panfish in spring, even though this part of the river generally does not have many sunfish. They hit as soon as the ice leaves the water (and through the ice, too). The best time is when the water level is up.

The river coves near my home do not have much aquatic vegetation. The main cover used here by sunfish is shoreline brush inundated by the high water.

Dabbling

A variation of the jig, grub and float method is dabbling with a long rod. Using cane poles, this has been popular in some areas for generations. It is a perfect method for working through pockets in weed beds.

Recently, the method has been refined by using long graphite-composite rods that are much lighter than the old cane or fiberglass poles. Another recent innovation of this method is the use of automatic fly reels.

The advantage of this system is that the jig and grub are fished vertically, with no line laying on top of the weeds. The sunfish are lifted straight up through the opening in the weeds, so the line does not get tangled.

Dabbling with a jig and float is a bit faster than casting the same rig. No time is wasted casting and retrieving.

When you locate a school of sunfish, there is usually no need to move the float. Small waves or ripples bob the float enough to give the jig action.

Go ultralight

You say that an eight-inch sunfish is not much of a fighter when compared with a three-pound bass? Well, a three-pound bass is not much of a fighter when compared to a 10-pound steelhead, but that does not take anything away from the bass. And the bass does not take anything away from a sunfish. No fish you can catch in Pennsylvania, or anywhere else, for that matter, is much of a match for a human angler, even the giant fish that dwarf us.

What puts sport in catching fish is matching the tackle to the fish. This means using the lightest ultralight tackle for sunfish. You can use almost any fishing tackle to catch sunfish, but ultralight tackle maximizes the sport.

My sunfish arsenal includes a 5 1/2-foot two-piece rod that a six-inch pumpkinseed can bend double; a slightly stiffer, faster, one-piece 5 1/3-foot rod used for jigging; and the lightest 7 1/2-foot rod I could find, which is nice for casting a jig and float.

Open-face spinning reels filled with four-pound line are mounted on all of these. The newest addition to the arsenal is a nine-foot rod and a modified automatic fly reel spooled with six-pound line, which I use for dabbling.

If I had to go with just one of these outfits for sunfish, any would do. But I prefer one of the longer rods because casting a jig and float is difficult with a short rod. The problem of casting an unwieldy jig and float can be solved with a sliding float (slip bobber) when fishing heavier jigs. However, sliding floats do not work well with ultralight jigs. These tiny jigs are not heavy enough to pull line through the sliding float.

We hear some pretty silly, disparaging remarks about sunfishing. Actually, sunfish are probably the most popular sport fish in the country, and just about every angler likes to catch sunfish. Get serious about sunfishing. Serious fun, that is.

KIDS PAGE!

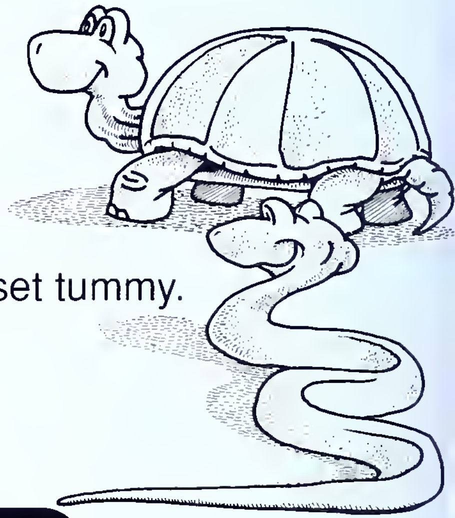
by Steve Ulsh

Reptile Fun

Pennsylvania has a wide variety of snakes and turtles. Some, like the black snake, are large, sometimes growing to be six feet long. Others, like the tiny worm snake, rarely exceed a length of one foot. Painted turtles are common, but bog turtles are rare. Box turtles and garter snakes are easily tamed, but rattlesnakes and snapping turtles are dangerous.

We've listed some but not all of Pennsylvania's snakes and turtles below. See if you can use some of their names to complete the questions in the Reptile Fun quiz. **The first one is done for you.**

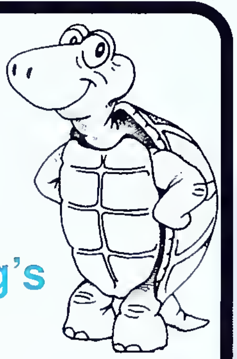
1. A ship captain's tool is a __map__.
2. Two-thirds of the earth's covering is ____________.
3. A sleeping sunbather could awaken ____________.
4. Two things you need to wrap a present are a __________ and a ______________.
5. A __________________ is a good baby amuser.
6. The __________________ desert is a famous United States landmark.
7. A ____________ is a type of wetland.
8. Part of a farm animal is a _________________.
9. If you got the measles, you'd probably be _______________.
10. A _____________ beats a ______________ in poker.
11. A __________________ is the prize of the "early bird."
12. A neglected kettle could become a ________________.
13. ____________ is the best word to describe the feeling of an upset tummy.
14. A _______________ is a stocking "holder-upper."
15. A puppet is mostly ____________________.



Snakes

Hognose
Ringneck
Garter
Ribbon
Green
Worm
Brown
Water
Black
Black Racer
Red-bellied
Milk
King
Copperhead
Massasauga
Mountain Earth
Rattle
Queen

Turtles



Mud
Wood
Spotted
Blanding's
Stinkpot
Painted
Map
Box
Softshell
Bog
Red-bellied

Answers
1. Map
2. Water
3. Red-bellied
4. Ribbon, Box
5. Rattle
6. Painted
7. Bog
8. Hognose
9. Spotted
10. King, Queen
11. Worm
12. Stinkpot
13. Green
14. Garter
15. Wood

illustration- George Lavanish

ANGLERS CURRENTS

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KARE for PA Teachers

The Keystone Aquatic Resource Education Program (KARE) is the Fish Commission's award-winning environmental education program on Pennsylvania's water resources. Fifteen-hour workshops are offered to teachers throughout Pennsylvania. These workshops provide exciting, new ideas for teaching science, math, social studies, language arts, physical education, music and art.

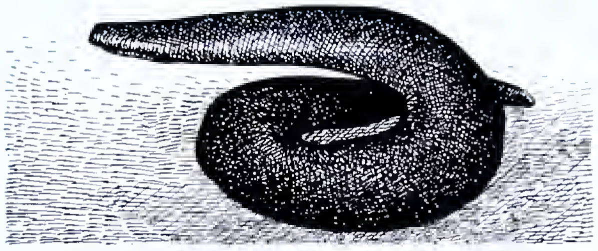
Each participant receives a free KARE Package of activity guides and supplementary materials: Water Resources in Pennsylvania, Aquatic Project WILD, Living in Water and Pennsylvania League of Angling Youth (PLAY) newsletters. These materials can be obtained only by participating in all sessions of a KARE workshop.

Some workshops are offered for intermediate unit or college credit; check with the workshop facilitator in your area. KARE is sponsored by the Fish Commission and in part by the U.S. Fish and Wildlife Service.

For more information, contact: KARE, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673. Phone: (717) 657-4518.

Angler's Notebook

by Chris Dolnack



Leeches are a top live bait for walleye, bass and jumbo panfish. Ribbon leeches, most commonly used as fishbait, are not bloodsuckers. Fish them on a leech rig or as dressing on a jig by hooking the leech on the sucker end (fat end).

To keep leeches fresh and lively, allow a quart of water for every half-pound of leeches. If your leeches begin to crawl up the sides of the container, chances are that fresh water is needed.

If you'll be traveling an hour or more to your fishing spot after buying minnows, have the bait dealer pack them in an oxygenated bag. This is especially important in hot weather.

Floating rigs featuring a small, adjustable foam float are just the ticket for keeping live bait above bottom vegetation. Using a small blow bottle to inject air into the crawler adds buoyancy. When fishing a fairly clean bottom, try a floating jighead to get into the strike zone.

Backtrolling is an effective technique for presenting live bait. Unfortunately, most transom-mounted trolling motors are configured to push the boat forward, not to pull it backward. To make your motor more efficient for backtrolling, reverse the powerhead. This allows the propeller to drive water away from the lower unit, not against it.

The popularity of fly fishing is growing. Unlike other types of angling where the weight of the lure carries the line, in fly fishing the line carries the lure. Weight-forward lines make longer casts much easier than either a level or double taper line because they carry most of their weight in the forward section of the line.

To slow the rate of fall when fishing a jig, try swapping the plastic body with a smaller jighead. The size profile of the bait is maintained while the larger body mass and lighter jighead produce an often tantalizing fall.

Dull hooks account for many missed strikes. A small hook file is ideal for frequent touch-ups. To put some bite back into a hook, run the file toward the point, on both sides of the hook, and on the bottom of the hook. This method maintains the triangular design of most fish hooks, and puts a new edge on the three cutting surfaces. The result? More fish brought to net.

Crowds on approved trout waters thin out considerably once action on warmwater species heats up. By now, trout are stream-smart and wary. Wear garments that blend in with the surroundings, keep a low profile and enjoy the solitude.

Don't be afraid to get hung up when fishing a crankbait. Successful crankbait anglers expect to lose a few lures because they run them into logs and brush piles, places where gamefish seek forage.

Lure color is not nearly as important as many anglers think, according to Dr. Loren Hill of the University of Oklahoma. Dr. Hill rates lure size, action and speed ahead of color.

illustration- George Lavanish

ANGLERS CURRENTS

Employee Honor Roll

Congratulations to the following Fish Commission employees, who in 1991 have served the Commission continually from 25 to 43 years.

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42 Years of Service

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D. Ray Merriman

38 Years of Service

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Dave Wolf

At the Fish Commission meeting last January, the Raystown Striper Club donated $5,000 to the Commission to enhance the Commission 1991 Angler Use, Harvest and Preference Survey. Raystown Striper Club President Nick Lambert (right center) and club treasurer Don Brumbaugh (right) make the donation to Commission President William J. Sabatose (left) and Executive Director Edward R. Miller (left center).

Art Michaels

Meet Helen "Kenny" Ferretti, Harrisburg Headquarters receptionist. Kenny works the headquarters reception area, known in the building as "the window." Among other duties, she directs visitors to various offices, answers telephone inquiries, provides fishing information, and sells fishing licenses, publications and magazine subscriptions. She is a part of the Commission Bureau of Education & Information. When you visit the Harrisburg Headquarters, Kenny will greet you.

On the Water

with Dave Wolf

Desert Sand and Bronze Trout

As I write this we are at war. CNN and the major networks carry it play by play into living rooms across the nation; it is difficult to think of anything else, or to place major significance on anything but this nasty affair we call war. But life must go on, my deadline for this column is at hand and I am asked to put my creative talents to the oar.

Putting things into proper perspective in the scheme of events has not been easy. Normally I think of May as a time for fly fishing for trout. I think of the sun's reflection making the waters where trout reside dance under its influence. I muse over the pictures etched in my mind—mayflies in great numbers lifting from the waters, trout sipping the hapless creatures and my fly tracking to a spot some three feet above the last rise. I see trout great and small lift to intercept my fraud and I feel the rod throbbing in my hand.

I feel the cold waters tugging at my waders and smell honeysuckle, the scent carried on a gentle breeze. I moisten my hands in preparation to release the trout. It is a brown, with dime-sized red spots adorning its bronze body. It is a healthy fish, born to the stream, and I hold it for a moment to admire and appreciate it. Then I watch as it swims into the depths ever so slowly until the water once again engulfs it and it is gone from view.

The hatch continues into late evening and I watch as the sun slides into the envelope of the mountains. The air turns brisk as a gun-metal sky signals the end of another day. I wind the line onto the reel, clamor from the stream and sit quietly listening to the trout that are still slurping the last of the mayflies struggling on the surface. Then, as if by signal, the stream and the trout become quiet and the last glimmer of day turns to night.

I turn on the small flashlight and follow the stream the half-mile to my car. The dampness and chill of evening has set in and I shiver as I put away the rod and climb into the car in search of warmth. As I drive into the night, all is well with the world, my escape has been pleasurable and I drink freely of the quiet, the rising trout, the mayflies and the smell of honeysuckle.

Now I feel extreme guilt. Fishing after all is a pastime and I have been caught up in daydreams of May and the pleasures that it bestows with great regularity. I daydream of bronze trout while our men and women fight on the desert sands of a far-away land. I await the opportunity to cast a fly to moving waters, while they await the opportunity to return home to their loved ones. While I hold a bronze trout in my hands with the opportunity to harvest it or grant it freedom, they risk their lives to grant all Americans freedom.

There is no comparison between desert sands and bronze trout.

It is like comparing a child at play to a great surgeon at work. The stress of war is felt throughout all countries involved, by all those who fight and by all of us on the home front. Still, life must go on in as normal a fashion as one can expect at times like these. Perhaps with the added stress of war I need to find bronze trout, honeysuckle and a flowing stream more than ever. Perhaps I need to be engulfed in a different environment for those few precious hours. One thing is for certain: At a time like this my appreciation of such things is heightened.

The guilt I feel may be unfounded, for most of what we do is not that important in comparison to the life-and-death struggle in which our fellow Americans and others have become engaged. Pastimes are important, perhaps as important as the daily business we attend to. Certainly there is no monetary reward in most pastimes, rather a settling of the mind and perhaps even the soul. Fishing brings forth rewards that can be measured only by those who partake of it, each with one's own measuring cup and all designed in a different way.

Desert sands and bronze trout are worlds apart and are not to be compared. Fishing is insignificant with our minds preoccupied with war. We can sit and twiddle our thumbs and worry ourselves to exhaustion, or we can seek the peace of the moving waters and sipping rises of bronze trout. Either way we can be patriotic and support our country and the men and women who have been called to preserve our freedom.

As I write this I can only hope and pray that by the time you read it, our men and women are home and together we can leave the thought of desert sands behind us and fish in hopes of catching bronze trout—side by side.

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Straight Talk

A Fitting Memorial

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

On July 30, 1990, the Pennsylvania Fish Commission passed a resolution designating the Penns Creek catch-and-release project in Mifflin and Union counties as the "Ralph W. Abele Memorial Glen."

On Sunday morning, April 29, 1991, members of the Pennsylvania Fish Commission and the Boating Advisory Board, and Commission staff, friends and members of the Abele family gathered at the Penns Creek site, located just upstream from the village of Weikert. During a brief ceremony the project was dedicated as a memorial to Ralph W. Abele. Commission staff constructed a beautiful cairn on which is mounted a permanent brass plaque to serve as a landmark for the Ralph W. Abele Memorial Glen.

The glen consists of nearly 430 acres of beautiful woodlands through which flows a 3.5-mile stretch of Penns Creek. This waterway is one of Pennsylvania's largest and most famous limestone trout streams. The stream is prime trout water, originating in Penns Cave. It is fed by many high-quality spring-fed streams such as Pine Creek, Elk Creek, Sinking Creek, Swift Run, Cherry Run and other mountain streams. The fast-falling stream has an ideal pool/riffle ratio, and summer temperatures remain lower than in other Pennsylvania streams its size. The section owned by the Fish Commission is the most isolated portion of the entire stream. The waterway hosts diverse, large fly hatches and an outstanding population of brown trout.

For these reasons, this section of Penns Creek, together with an additional privately owned stream section at the lower end of the glen, is managed as a walk-in, catch-and-release trout management area, for a total length of 3.9 miles. Fishing is permitted year-round during daylight hours with the use of artificial lures only, and either spinning or fly fishing gear. It has become a very popular fishery for many anglers who enjoy and support the catch-and-release concept.

This tract was purchased in 1975 by the Pennsylvania Fish Commission, when Ralph was executive director, for a total cost of $300,000, and the area has since been maintained in near-pristine condition. The project was one of Ralph's favorite spots and he was often seen walking through its woodlands and along its stream banks.

It is without question a most fitting memorial.

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The covers

The battling musky on this issue's front cover, photographed by Doug Stamm, shows the kind of action you can scare up this month everywhere in Pennsylvania with many different kinds of fish. On the back cover, photographed by Darl Black, Bob Hornstrom hefts a Conneaut Lake (Crawford County) bass. And speaking of bass, smallmouth bass anglers will want to turn to page 10 to check out the results of the Commission smallmouth bass survey. The article on page 16 explains how to fool largemouth and smallmouth bass on topwater lures, a productive ploy from now until fall. Another effective tactic is fishing for bass on live bait, and in Pennsylvania that's mostly nightcrawlers, crayfish and minnows. See page 24 for details. Trout fishing this month can also sizzle, and on page 21 you can read about how to keep the action cookin'. On page 31 we open up a can of worms by tackling the subject of tournament fishing, and all anglers and boaters will want to heed the word of caution on page 8. This month's 125th Commission anniversary article on page 4 takes you inside the Commission's access program, and on page 28, take a look at readers' opinions. Lastly, walleye enthusiasts won't want to pass up the secrets on page 15.

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SECURING PUBLIC ACCESS

BY K. RONALD WEIS

Have you ever motored through a part of Pennsylvania, enjoying the magnificent scenery, and suddenly came upon an enticing stretch of water that begs you to explore it with your fishing rod, only to discover that there is no public access to it? Or have you returned to your favorite old fishing spot early on a sparkling April morning only to discover "no trespassing" signs blocking your entry? If you have experienced these or similar situations, you should appreciate what the Fish Commission's access program is all about.

Developing public access in Pennsylvania covers a wide gamut of requirements and problems. On the lower Delaware River, for example, we deal with tidal fluctuations of about seven feet and the problems of salt water. Just north of Philadelphia, where the freshwater and brackish water meet, we must contend with the tide and with freshwater icing problems. Lake Erie accesses present problems typical of all the Great Lakes: ice, heavy wave action and frequent strong storms. Lake Erie poses yet another obstacle. Most of Pennsylvania's Lake Erie shoreline is composed of high, erodible bluffs. With the availability of very little flat land at lake level except at areas where streams enter the lake, developed and potential access sites are rare.

Inland and boundary waters in Pennsylvania present a variety of public access development challenges and opportunities. They include the "big" water of the lower Allegheny and Ohio rivers; the slow, meandering expanses of the wide but shallow Susquehanna River; the Delaware, which begins as a small stream in the north to become the waterway supporting the seaport of Philadelphia in the south; and many small whitewater accesses on mountain streams.

Pennsylvania also has its share of access opportunities on inland lakes, which vary in size up to 8,300 acres. Some natural lakes are open to the public, but the majority of lakes providing public access are manmade. The largest are the result of Corps of Engineers flood control projects. The Fish Commission has built or acquired 54 lakes on its own behalf solely for recreational purposes, and they range in size from 18 acres to 950 acres.

1866-1991
125 years

Site selection

Access development is a much more involved process than one may suspect at first glance. One of the most important and more difficult initial tasks is site selection.

The ideal site is a generous parcel of level land, on a little-used, large body of good-quality water near a large population center. The site should be located just above the flood plain, on a straight stretch of slowly flowing water. The bank should be a vegetated, stable, erosion-resistant slope of between 12 and 15 percent grade. The body of water should be deep enough for the planned activity, with a minimum depth of three feet at the end of the ramp. There should not be underwater obstructions or unpredictable changes in depth. The bottom should be stable and not subject to change from normal flows, storms, waves, tides, erosion or other deposition.

Needless to say, the ideal site does not exist, at least not anymore. Therefore, during the selection process it is necessary to weigh the attributes and deficiencies of those sites available not only with the acquisition and development costs, but with the projected use, maintenance and potential problems. Because an access is a long-term investment, poor judgments and errors made in the beginning can lead to major expenses and liabilities for years in the future.

We encounter pitfalls when we have features that are less than ideal. Steep or shallow banks necessitate elevated ramps. Sites on the outside of stream bends are subjected to fast and strong currents. Frequent dredging is necessary for sites on the inside of such bends, which are subject to heavy deposition of water-borne solids; steep or shallow banks, which necessitate recessed or elevated ramps; and sites down-current of stream confluences.

Launch ramps developed on slopes that are too shallow do not permit a trailered boat to float freely when the rig reaches the maximum depth. Ramps that are too steep not only cause fear to those backing down them to the water, but they can create situations in which it is not possible to retrieve heavy watercraft with the normal tow vehicle.

If the land lays within the flood plain, it is subject to flooding, particularly in the spring, when warm spring rains melt the snowpack. When this occurs, the inundated area usually receives a generous deposition of water-borne sediment, causing a major maintenance task. If the access has stone paving, rebuilding the access may become necessary. Should the roads, ramp and parking surfaces be paved with hard-surfaced materials, the site can usually be reclaimed by washing with fire hoses—a simpler but still time-consuming job.

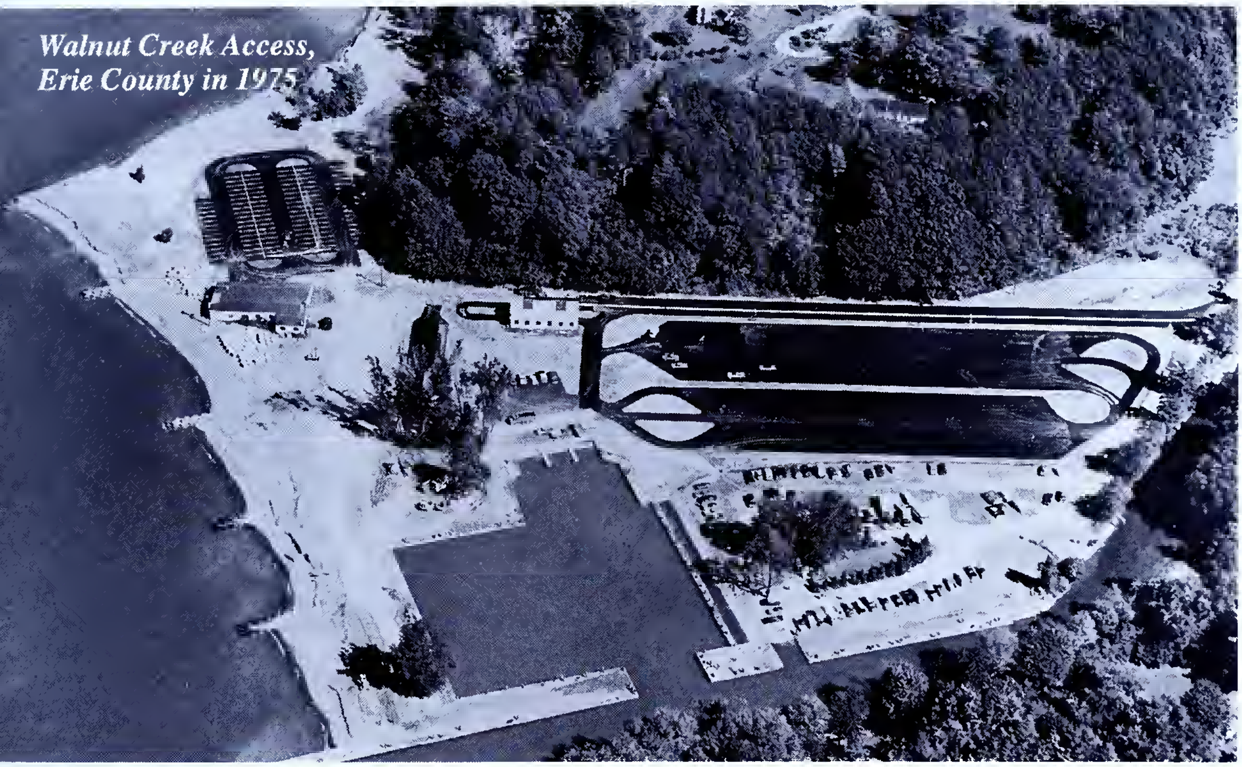
Access entrance

One other consideration in site selection that is very important is the access entrance from the public road system. Because many vehicles tow a trailer, this intersection poses more problems than most other intersections. A boat trailer is frequently long. It requires a greater turning radius and is often not identifiable when the tow vehicle and trailer are approached from the front.

The problem is complicated further because railroads have been constructed along many waterways on the very locations that would make good access points. Procedurally, obtaining a public railroad crossing is a difficult task in itself. In addition, public roads are often parallel to and close to the tracks, and it is not possible to develop a vehicular transition suitable for safe use by automobiles pulling trailers. These conditions make many otherwise acceptable sites unsuitable.

Other difficulties

Beside the difficulties presented by the physical conditions of the natural landscape, we must consider those presented by potential users and abusers. When you mention "people problems," vandalism, littering and graffiti immediately come to mind. We have to deal with these problems constantly, but they are not as annoying as are some other "people problems." Perhaps this is because vandalism, littering and graffiti have become so universal that we have come to expect and accept them. To me, it is because these are the acts of the abusers, not the users. It is far more irritating when those few people who benefit most from the facility commit thoughtless and irresponsible acts that depreciate the use and availability of the area to others. Some of these other problems are:


Walnut Creek Access, Erie County in 1975

• **Overcrowding.** When all the designated parking spaces are taken, the facility is full. Parking on the roadways, the grass and other nondesignated areas compromises the safety and welfare of other users, as well as often increasing operating costs from the resulting damages.

• **Commercial exploitation.** Public ramps are often used without permission by marina operators, construction people, and others to launch or retrieve loads far heavier than those for which the ramp was intended or designed. This frequently causes structural damage to the ramp.

• **Events.** Activities are held by both commercial and private entities, with or without permission. They monopolize the facility, thereby denying the rights of individuals to use the access. Some of these events are fishing derbies, float trips and boating competitions. We recognize the rights, needs and values inherent in these events, but a group cannot by its numbers usurp the rights of others.

• **Powerloading.** This is a procedure among motorboaters, mostly those with powerful engines. It consists of positioning the bow of the boat in line with a partially submerged trailer. Operators then gun the engine until the craft "pops" out of the water and onto the trailer. The tremendous turbulence created by the powerful, sudden action of the prop digs a hole in the bottom of the waterway. This undermines the ramp structures and causes major difficulties for those launching or retrieving in the conventional way.

This procedure causes major maintenance difficulties for facility managers throughout the country because ramps have not been designed to withstand it. Because the requisite protective construction must occur underwater, it is expensive and difficult to build. What is so annoying is that "powerloading" is not necessary. With today's power winches and tilting trailers, retrieving a boat has never been easier. "Powerloading" is just "showing off" at everyone else's expense.

• **User conflicts.** Disagreements among the users of our waterways, all of whom have a vested right to be there, cause problems for our managers and administrators. When conflicts arise among boaters and shore fishermen, anglers and water skiers, and sailboaters and motorboaters, they are best handled by those involved using common sense, the rules of the road and understanding of mutual rights and needs.

All in all, "people problems" are ultimately very expensive and prevent the development of additional needed facilities. Solving "people problems" takes both time and funds away from new projects. They are also the root difficulty we encounter from private landowners when acquiring property for public facilities. The Fish Commission believes that the general public has a fundamental right to the use and enjoyment of all Pennsylvania's public waterways. The Commission is committed to ensuring that proper access is provided.

Beginnings

Historically, our access program began many years ago, in 1917, long before anyone even thought of it as an organized program. It started because an acquisition opportunity came along and someone recognized the value of securing permanent public access to Pennsylvania's beautiful, bountiful waterways.

The Fish Commission's access program began with the purchase of several properties that already contained primitive boating facilities. From this point on, access acquisition and development slowly grew until the early 1950s. A change was then made in the Fish Code by the addition of a provision that required 15 percent of license revenues to be used in the acquisition of land for public use.

In the late 1960s, a Commonwealth bond issue popularly known as "Project 70" provided for the acquisition of land for recreational uses. This was followed by another bond issue known as "Project 500," whose main objective was to furnish funding for development of Project 70 acquisitions. These funds forced for the first time the recognition of access acquisition and development as a program in its own right, and program criteria were established and planning set in motion for the use of available funds.

In addition, these state funding sources provided matching funds that increased the Commission's ability to acquire funding from the federal Dingle-Johnson Act and Soil Conservation Service programs. With these additional funds, access development rose to a rate of seven per year through the late 1960s and 1970s.

In 1980, with the adoption of a new Fish and Boat Code, the 15 percent dedicated funding requirement was eliminated. The high inflation of the late 1970s and 1980s soon resulted in no money available for access acquisition. However, the Commission's Real Estate Section was able to continue to acquire property for access by means of "mutually beneficial" municipal leases. More recently, a combination of high costs, smaller budgets and a stringent approval process has brought our access development to a virtual standstill.

With the struggle for funding, it was increasingly important that we learn and understand more about the Fish Commission's existing accesses. It began without an overall concept or objective other than to provide public access points to the lakes and other public waters of Pennsylvania. Because accesses were few, each one was an important addition. Most often the decisions were dictated by the availability of free or inexpensive property rather than the fulfillment of any program goal or objective.

"Formal" program

In 1968, Project 70 gave the Commission the opportunity to embark on a "formal" access program. The goals and objectives seem to have been no more complicated than to "provide a boating and fishing opportunity within 25 miles of every Pennsylvania resident's doorstep." An inventory of the major Pennsylvania waters was completed. A classification of access type was initiated, and some planning for future acquisition and development was begun.

Sadly, it appears that the process lacked commitment. Recordkeeping declined and nearly vanished altogether when, with the availability of funds in the 1970s, everyone got caught up in the business of production. The singular goal was not supported by intermediate milestones or objectives, so it was difficult to measure progress or success of the program. Existing accesses were simply plotted on a Pennsylvania map showing a circle with a 25-mile radius. Those portions of the map remaining open then became the target for new acquisitions. It appears that no attempt was made to evaluate either the "program" or any individual access for usage or cost-effectiveness.

Accesses continued to be acquired and developed because "it was something we did" with new sites chosen either by the filling in of "holes," by the availability of inexpensive and/or free lands, or by political influence. In 1982, through efforts of a concerned Commission employee, a study of the access concept and how accesses related to the fishing and boating public as well as other Commission programs was begun.

In 1986, a multi-pronged attack on our access program was launched in an attempt to gain a better understanding of where the program stood, why and how it got there, and where the future should take it. A committee was formed consisting of personnel from Commission work units involved in access development. The committee was assigned to develop a more systematic approach for determining and setting priorities on those areas in the Commonwealth where future access development was most needed. The committee set forth the procedures for establishing priorities for acquiring and developing access areas.

We developed a technique to monitor access usage by checking traffic through the use of electronic traffic counters and procured the necessary equipment. We believe that the data collected adequately reflects nuances in usage due to weather, holidays and seasons to give a useful portrayal of the actual usage.

We created and instituted a cost accounting program to track maintenance costs accurately.

We designed a program and hired part-time employees to inventory all existing accesses to Pennsylvania's major river systems. In the autumn of 1990 our sampling of the Commonwealth's active accesses was completed. Our analysis of this data is not yet finished, but we have examined some of the data, and we have used the results from the survey of the Susquehanna River system in our work with the "Save the Chesapeake" Access Committee.

Much work and experimentation remains to be accomplished, but we are optimistic that we have at least the beginnings of an operational system that allows non-biased setting of priorities of proposed access sites.

Access value

Addressing the value of accesses in terms of recreational opportunity is difficult, particularly when facility evaluation results are to be used comparatively with other pursuits. This comparison inevitably translates into financial terms. Part of the problem is how to demonstrate that the expenditure of funds, on behalf of sportsmen, was a worthwhile investment and an acceptable return on their license dollars.

In our approach to analyze the return on our investment, it was necessary to learn acquisition cost, development cost, and the cost of maintaining each access area. To obtain acquisition and development costs, we searched Commission files and records. The acquisition costs and development costs were then added together and divided by 25 years (determined to be the useful life of a project) to yield an annual cost of ownership.

Meticulous records of maintenance costs on each individual access have been maintained for nearly four years. These records are continuously averaged to obtain an annual cost of operating and maintaining an area.

Finally, the annual cost of ownership and the cost of operation and maintenance were added to get a total annual cost of each access. We then divided this by a dollar value, which represented the worth of a single boating or fishing experience to an individual sportsman. This figure was obtained by a thorough search of work done on the subject by various accredited recreational economists. This yielded the value of the return on each dollar invested in the access program on behalf of the sportsman.

By applying this technique to each of the accesses for which we have compiled data thus far and then averaging all the results, we arrive at an average return of $19,342 worth of fishing and boating enjoyment for each dollar expended.

Fish Commission photos

Central Pennsylvania readers might recognize this site (above) as the Goldsboro Access (Susquehanna River, York County) under construction in 1975. At left, under construction in 1974 is the Kimmett's Lock Access on the Lehigh River at Allentown. Below is the Walnut Creek Access, Erie County, under construction in 1974. The Commission access program includes some 250 sites throughout Pennsylvania.

Although we remain in the early stages of our experiment, we are delighted with the significant amount of use and the return on our investment from our access program. We are encouraged and optimistic in regard to our establishing priorities, although it is still too early to be certain of its long-term validity. Most of all, we are buoyed by finally getting people knowledgeably involved in our access program. We are enthusiastic and optimistic about what we have learned, and we are sharing our experience with others in the hopes that their exposure might stimulate further dialogue and creative ideas. We invite your involvement and comment.

K. Ronald Weis is chief of the Commission Division of Engineering and Technical Services.

2,000

Fishing, canoeing and powerboating are common river activities that have grown to become leading forms of recreation. However, river sports and travel on rivers are not without dangers. Special safety considerations should be given to river activities, particularly when manmade obstructions that change the normal flow of a river have been erected. Low-head dams are one such obstruction. Rivers that contain low-head dams can present a great threat to the unwary. Every year these structures claim the lives of an increasing number of sportsmen.

Low-head dams are dangerous. In fact, of all things on a river that are dangerous, the low-head dam is considered by many water safety specialists to be the most dangerous. A low-head dam creates a drop in river height as the river flows over a fixed crest or wall (usually manmade).

Hazards exist not only from going over the dam, an obvious source of danger, but also from below the dam where the power of the backwash is frequently overlooked. This backwash is called a hydraulic, or reversal. A boat or anything caught in this backwash below the dam is trapped and recirculated many times, making escape or rescue most difficult. A person caught in the backwash of a dam is carried to the face of the dam, where water pouring over it washes him down under and back beneath the boil—that point where the water from below surfaces and moves either downstream or back toward the face of the dam. When the victim struggles to the surface, the backwash again carries him to the face of the dam, thus continuing the cycle.

To complicate matters, these dams are usually loaded with debris, such as tires and logs on the surface and rocks and steel bars just below, posing additional problems for victims.

Dams do not need to have a deep drop to create a dangerous backwash. During periods of high water and heavy rains, the backwash current problems get worse, and the reach of the backwash current extends downstream. A small low-head dam that may have provided a refreshing wading spot at low water can become a monstrous death trap when river levels are up. In other words, it is not the drop of the dam that is the lethal danger, but the backwash current. This backwash current is governed by volume of water and flow.

Escape

If rescue is not immediate and the victim is to survive and escape this water trap, he must go down with the current coming over the face of the dam, stay as close to the bottom as possible, and try to get past the crest of the boil before resurfacing. This maneuver is very difficult, and few have done it. Another method of escape, with rescuers available, is for the victim to attempt lateral movement across the dam after each cycle. This involves proper breathing control and great endurance.

It is important to note that characteristics like the upstream or downstream curve of the dam may determine to which lateral direction an object or person caught in the hydraulic force of the dam will move. If the dam is straight, the direction of lateral movement may be difficult to determine. If the dam has an upstream or downstream curve, direction of movement is predictable.

If the dam curves upstream (center of the dam is more upstream than the sides), then the action of the hydraulic has a tendency to roll objects to the center of the dam. On the other hand, if the dam curves downstream (center of the dam is farther downstream than the sides), objects caught in the hydraulic more than likely roll toward the sides of the dam as the recirculation process continues.

Swatara Creek, Dauphin County.

If the victim is able to work his way to either side of the dam, an additional frequent problem then confronts him. The ends of these manmade structures are terminated by walls of concrete or stone. Escape from the sides by climbing out is highly unlikely. Although rescuers may, through an extension-assist of some means (throw line or ladder), facilitate a successful rescue from the powerful backwash at these side locations.

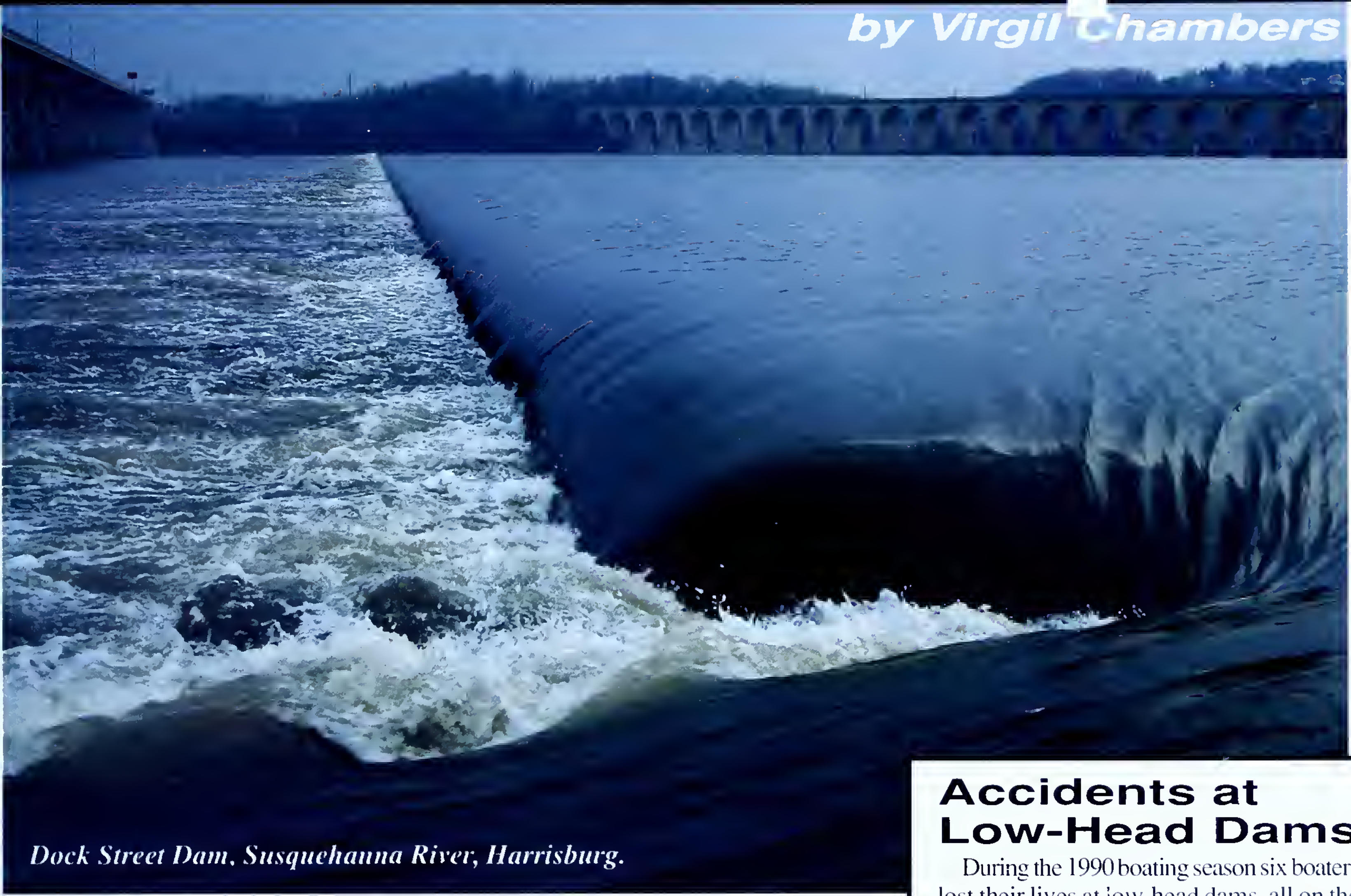
Regardless, considering the chances for escape or rescue, the chances of survival are slim, but certainly greater if the victim is wearing a personal flotation device (PFD). This is true especially if the victim finds himself floating downstream. This can occur through escape efforts or because of a break in the uniform flow of the hydraulic, which would cause him to be released from the water trap. In many instances the fatigue created by the recirculating action renders a person too weak to swim. This places enormous survival value on the flotation properties that a PFD provides. Without a PFD, the victim is not likely to stay afloat.

What can be done

Owners of low-head dams or rescuers who have these structures within their response areas should be aware that these dams are potentially dangerous, especially to fishermen and boaters. Warning buoys or signs can be effective in discouraging anglers and boaters, but these methods are often ignored and can be difficult to maintain.

Death Traps

by Virgil Chambers



Dock Street Dam, Susquehanna River, Harrisburg.

The placement of buoys on the water does not prevent one from entering the hazard. Buoys merely warn of the impending danger. (Signs, if properly placed, are the best method to mark low-head dams—people are generally accustomed to reading signs). The warning message should be strong, implying the existence of a life-threatening serious condition. This strong message is important because a low-head dam does not look dangerous and the public does not perceive the hazard as serious or life-endangering.

Short of eliminating the low-head dam, the hydraulic action of the dam can be squelched. Huge boulders placed immediately downstream from the dam can be effective in breaking up the reversal action. This operation requires heavy equipment and can be very expensive, depending on the size of the dam. A hydraulic engineer should be contacted to design corrective measures properly in terminating the reversal.

Suggestions are often made about placing a cable or fencing across the water, preventing boats and people from entering the dangerous backwash or area of a low-head dam. The problem with a cable or fencing is that a tremendous amount of debris which comes down most rivers and streams builds up and causes complications that can result in additional river travel or safety concerns. With the force that this buildup of debris has on the cable or wire, a washout is possible during high water conditions.

One bottom line solution may be in the form of education and awareness. If a low-head dam exists in a given location, efforts through press releases and information flyers can be effective in alerting river users. In addition, easy-to-read, understandable warning signs in appropriate locations can help people make a more informed decision on where to fish and boat. Usually, if people understand the risk, they'll take action to avoid the danger.

Virgil Chambers is Chief of the Commission Boating Safety and Education Division.

Accidents at Low-Head Dams

During the 1990 boating season six boaters lost their lives at low-head dams, all on the Susquehanna River. The Dock Street Dam in Harrisburg is eight-tenths of a mile wide. It has one spillway on the Harrisburg side and one break near the middle. The first boater lost his life in May 1990 when the small motorboat he was fishing from got caught in the hydraulic below the dam and capsized. Two other fishermen on board made it to safety. One had to be rescued.

In July 1990, three more fishermen drowned when their small rowboat capsized in the hydraulic. As in the previous accident, the boat was pulled into the dam by the backwash, where it capsized. Following this accident, warning signs were placed on the bridge piers immediately below the dam.

In November 1990, a man and his wife were spotting deer from a small motorboat above the Red Hill Dam near Three Mile Island. They motored too close and were washed over the dam by the powerful current. No rescue was possible.—*Dan Martin, Commission Boating Accident Review Officer.*

Joe Reynolds

Smallmouth Bass Regulations: Changes for 1991

by Rickalon L. Hoopes

The September 1990 *Pennsylvania Angler* included the article "Smallmouth Bass Regulations: Where Should We Go From Here?" This article discussed the potential effects of alternative smallmouth bass regulations on smallmouth bass populations and the anglers who fish for smallmouth in Pennsylvania rivers and streams. Included with the article was a questionnaire containing 15 questions that solicited opinions of smallmouth bass anglers concerning regulation changes they would support.

Evaluation of angler responses to the questionnaire and smallmouth bass biological information, as well as active support from avid smallmouth bass anglers, led the Fish Commission to change stream and river smallmouth bass regulations for 1991.

1991 regulation changes

Stream and river bass throughout Pennsylvania's inland waters are managed with a closed season from the first Saturday after April 11 to the first Saturday after June 11.

The minimum size limit for stream and river bass has been increased to 12 inches, and the creel limit remains six bass per day of combined species.

These changes now make stream and river bass regulations the same as the bass regulations have been for ponds, lakes and reservoirs since 1981. This simplifies the bass management regulations.

In addition, special regulations were approved for the main stem of the Susquehanna River from the Dock Street Dam in Harrisburg downstream to Holtwood Dam. These special regulations include a 15-inch minimum size limit on bass and a four-bass-per-day creel limit. The season for bass is closed from the first Saturday after April 11 to the first Saturday after June 11 as in statewide bass regulations.

Readers who follow Fish Commission bass management may have noticed that these special regulations are those of the Big Bass Program, which the Commission started using in 1991. Thus, the lower Susquehanna River has been included in the Big Bass Program beginning in 1991.

As might be expected, these regulation changes have not made every smallmouth bass angler happy. This should not be too surprising because it is impossible to satisfy everyone.

In this article I want to share with you the results of the smallmouth bass angler opinions and biological information that helped shape these regulation changes. I also want to indicate some issues that remain to be addressed.

graphics: Ted Walke

Figure 1

RATING SMB FISHING

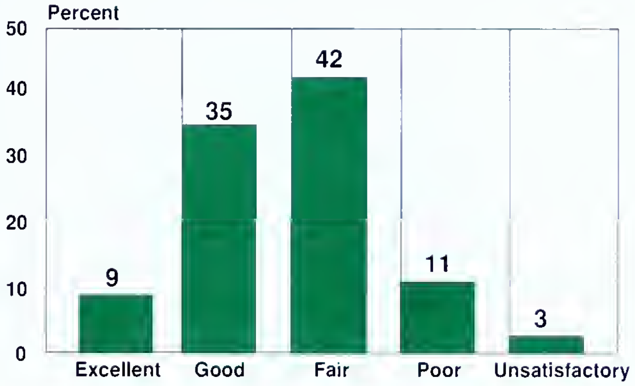


Figure 2

IMPORTANT TO CATCH

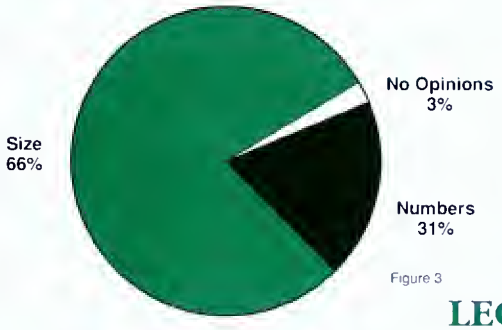


Figure 3

LEGAL SMB ABUNDANCE

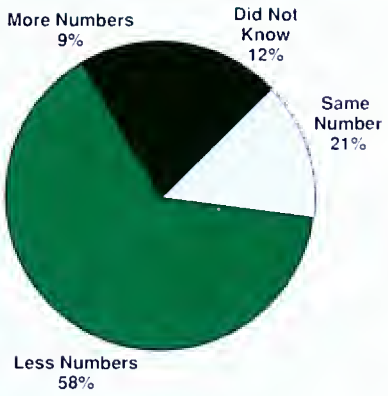


Figure 4

SMB HARVEST

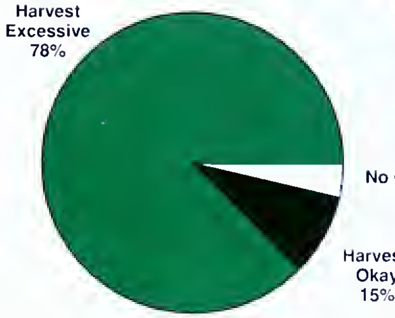


Figure 5

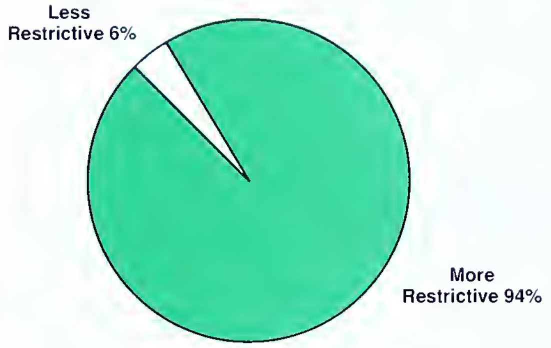

FUTURE SMB REGULATIONS

Figure 6

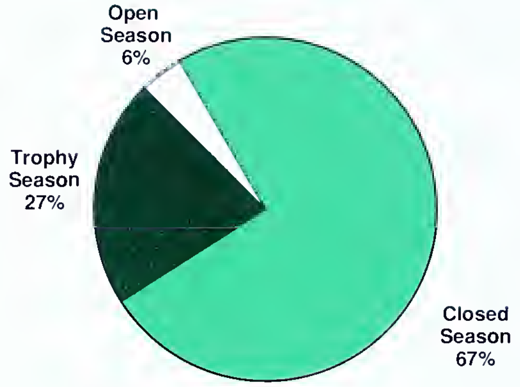

SPAWNING PERIOD REGULATION

Figure 7

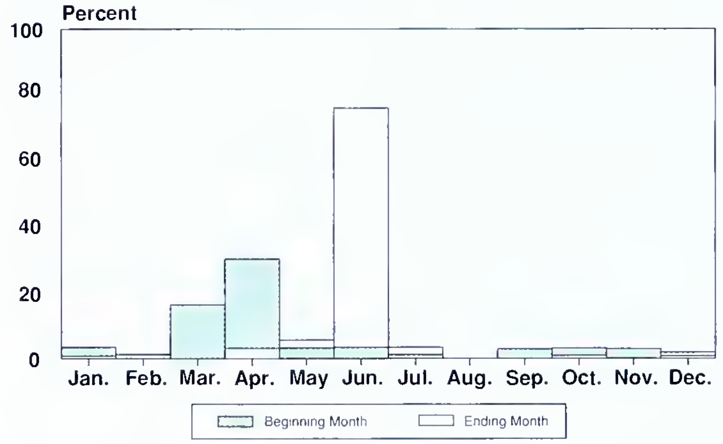
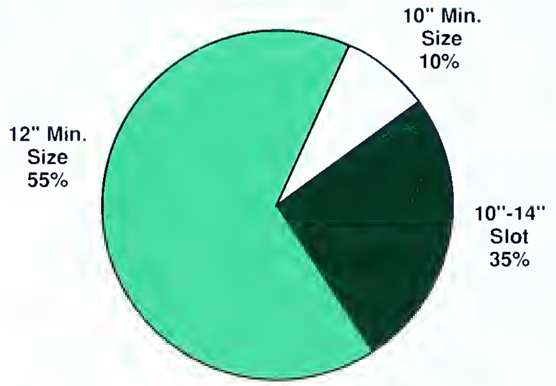

CLOSED SEASON

Figure 8


PREFERRED SIZE REGS

Angler responses

The Commission received a total of 1,044 usable smallmouth bass angler responses by the October 15, 1990, deadline. More than 200 personal letters accompanied the questionnaires. The questionnaire responses were entered into a computer and I summarized the results for the Commissioners to consider at their October meeting. I read all the 200-plus letters thoroughly. These helped me define and properly emphasize the critical issues.

Smallmouth bass anglers were asked where they fished. The most frequent response (41 percent) was from anglers who said that they fished both in and outside of the Susquehanna River basin. There were 36 percent of the respondents who said they fished only in the Susquehanna River basin. The remaining 23 percent said that they fish only outside the Susquehanna River basin.

Knowledge of where anglers had fished was important because stream and river bass regulations in the Susquehanna River basin have included a trophy season during the spring. Outside the Susquehanna River basin there has been no closed season for bass in streams and rivers. Angler opinions about their smallmouth bass fishing experiences and support for future regulations were influenced by the regulations they had seen on different streams and rivers.

Anglers were asked to rate smallmouth bass fishing. The most frequent response was that smallmouth bass fishing was "fair," but a response that fishing was "good" was a close second in the ratings (Figure 1). The middle-of-the-road overall rating of smallmouth bass fishing as something slightly better than fair suggests that in general, the respondents believe there was room for improvement in smallmouth bass fishing but also that it is better than their perception of unsatisfactory fishing.

When asked to choose between size of bass and numbers caught, a majority of the anglers (66 percent) responded that size of smallmouth bass caught was most important as a measure of high-quality smallmouth bass fishing (Figure 2). The majority of responding anglers (58 percent) also believe that they have been catching fewer legal-size bass since 1987 (Figure 3), and a strong majority of the responding anglers (78 percent) think that smallmouth bass harvest has been excessive (Figure 4).

The smallmouth bass angler's mediocre rating of the quality of smallmouth bass fishing is not surprising in light of their opinions that they most value size of smallmouth bass caught. But in recent years they have been catching fewer legal-size bass and they attribute this to excessive harvest of smallmouth bass.

Responding smallmouth bass anglers overwhelmingly wanted more restrictive regulation of smallmouth bass fishing (Figure 5). Several questions were asked to determine the level of support for various regulatory approaches that can control smallmouth bass harvest.

Harvest of smallmouth bass during their spawning period has been controversial since implementation of the year-round season in 1981. It was clear that an overwhelming majority of responding anglers wanted protection for smallmouth bass during the spawning season beyond that provided by the creel and size limits used during the rest of the year. A substantial majority wanted no harvest as evidenced through the support for the closed season (Figure 6).

Anglers were asked when they prefer that the closed season begin and end. Although nearly all months of the year were suggested as possible opening and closing times, there was strong support for the closed season during spawning to begin in mid-April and end in mid-June (Figure 7), as it has on ponds, lakes and reservoirs since 1981. There was a significant number of anglers who supported March closing dates.

Although stream and river bass have had a 10-inch minimum size limit since 1981, it was clear that nearly all smallmouth bass anglers supported more restrictive minimum size limits (Figure 8). When asked which size limit the angler wanted, most selected 12 inches. Surprising numbers of anglers supported much more restrictive size limits. Some 35 percent wanted the 10- to 14-inch slot limit option (Figure 8), and more than 27 percent suggested minimum size limits over 12 inches (Figure 9).

The great majority of anglers suggested creel limits lower than the six-bass creel limit that has been used traditionally. A four-bass creel limit was the most frequently suggested (34 percent), and daily creel limits between two and six were more or less evenly favored (Figure 10).

Developing the new regulations

Simplifying regulations while maintaining their biological and social effectiveness are principles that helped guide changes in regulations for smallmouth bass. We chose to retain the six-bass-per-day creel limit for use in the statewide stream and river bass regulations because creel limits are a weak tool for reducing bass harvest, and the six-bass-per-day limit is consistent with bass regulations on lakes.

Figure 11 shows the limited utility of creel limits in reducing bass harvest. A four-bass creel limit, most frequently selected by anglers, would reduce harvest only by 2.5 percent. A creel limit would help reduce harvest only if it were very restrictive. A two-bass-per-day creel limit would reduce harvest by 19 percent, and although that would be a significant reduction in bass harvest, a two-bass-per-day creel was not strongly supported by responding anglers.

The 12-inch minimum size limit, in contrast, would reduce smallmouth bass harvest by nearly 50 percent (Figure 12). Where the 15-inch minimum size limit is used, bass harvest would be reduced by nearly 95 percent.

The closed season is most effective in reducing harvest because no bass can be legally killed by anglers during the closed season. Implementing the closed season in the Susquehanna River basin would occur when previously the trophy season was in effect. The trophy season was started in 1987 and had already greatly reduced smallmouth bass harvest during the spawning period, so the closed season there would provide a small amount of additional protection. Outside the Susquehanna River basin, the bass season has been open year-round since 1981. In the streams and rivers outside the Susquehanna River basin, the closed season can be expected to reduce harvest by about 50 percent.

Implementation of these changes occurred for the 1991 fishing season. Although these changes do not appear in the regulation summary provided when each angler purchases a license, conscientious anglers will comply with the regulation changes to promote rapid improvement in smallmouth catches.

Smallmouth bass reproduction was relatively poor in 1989 and 1990 because of cool weather and flooding during the spawning period. The decision for implementing the regulation changes for 1991 was geared to protect the relatively strong 1987 and 1988 smallmouth bass year classes (Figure 13).

Anglers can expect their catches of smallmouth bass over 12 inches to double within two years with the protection of the 1987 and 1988 year classes. Without protecting these year classes now, they will be over 10 inches in 1991 and would provide most of the harvest. Catches of more large smallmouth bass would have had to await strong reproduction in the future, and the benefits of more conservative regulations would not have been seen for several years.

The use of Big Bass Program regulations on the Susquehanna River between Dock Street Dam and Holtwood Dam represents a bold initiative to promote high catch rates of large bass. Smallmouth bass anglers who fished this area of the river advocated significantly more conservative regulations than anglers who fished other rivers. The combination

Figure 9

SMB SIZE LIMIT

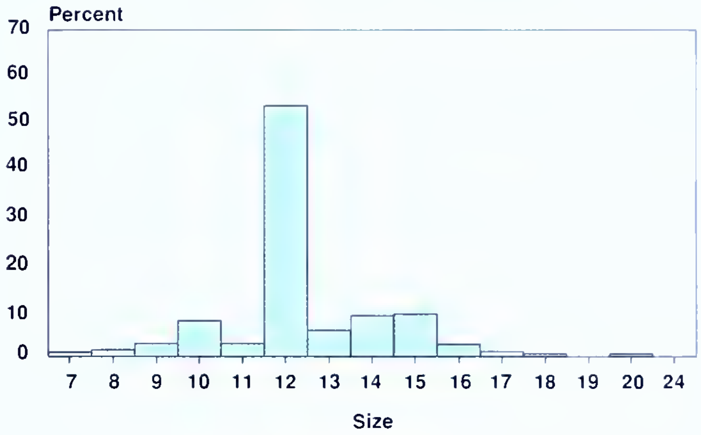


Figure 10

SMB CREEL LIMIT

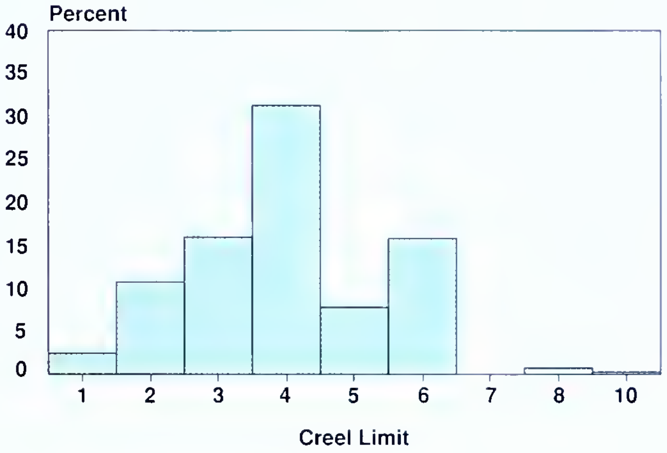


Figure 11

SMB SAVED
By Creel Limits

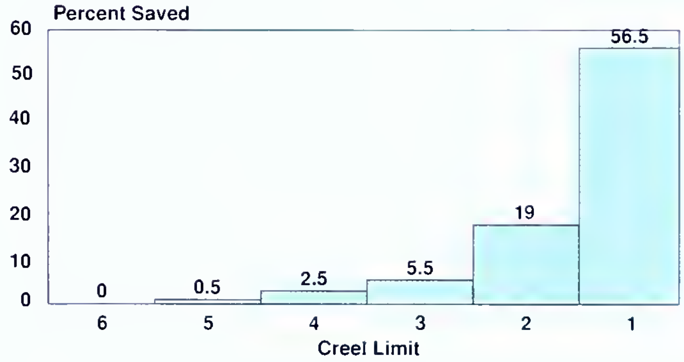
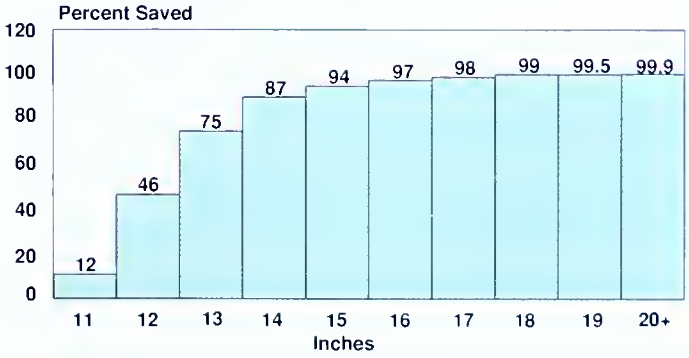


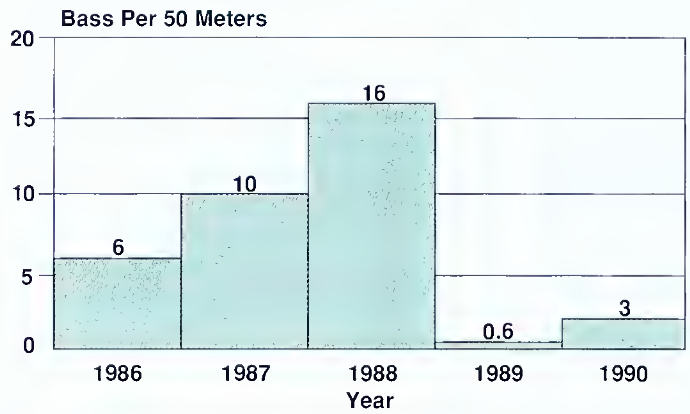
Figure 12

SMB SAVED
By Size Limits



graphics- Ted Walke

Figure 13



SMB YOY CATCH

of the closed season and 15-inch minimum size limit will result in mainly catch-and-release smallmouth bass fishing. Within about five years, anglers can expect to catch more than four times the number of bass over 12 inches and catches of bass over 15 inches should double. The catch of bass between 12 and 15 inches should be sustained because these fish will have to be released. Keeping bass would only be legal if they are over 15 inches and taken during the open season.

Other issues

Some issues concerning bass management regulations were not fully resolved by the 1991 regulation changes. These issues require further attention by the Fish Commission and input from concerned bass anglers.

The extent of springtime protection for bass was a concern of many anglers. This can be seen by anglers who advocated protection for smallmouth bass during March and earlier months. These anglers have a reasonable concern that large prespawn bass, often grouped in shallow water in March and April, are very vulnerable to harvest. Even though river conditions and the weather often discourage fishing at this time, there is no doubt that if enough fishing pressure were directed toward these concentrations, large numbers of fish could be harvested.

The closed season, even though apparently advocated by the majority of the anglers, has also received legitimate criticism. The biological intent of the closed season is to reduce fish harvest, the amount of the reduction governed by the duration of the closure. It is undeniably effective in reducing harvest, but an additional result of the closed season is that it discourages fishing. Our regulations for all closed seasons indicate that there should not be any directed angling for a fish species during its closed season as well as no catch and harvest. We can consider alternative regulations to provide no-harvest protection while encouraging or allowing directed fishing for the protected fish. Catch-and-release or no-kill seasons are alternatives.

Many anglers who were active in their support for more conservative regulations for smallmouth bass thought that very restrictive regulations, like those of the Big Bass Program, should have been applied to more waters and specifically to more of the Susquehanna River. As anglers and the Fish Commission gain experience with using these restrictive regulations for river fisheries, it should be easier to have them applied more extensively on Pennsylvania's streams and rivers.

There are substantial numbers of smallmouth bass anglers (perhaps 25 percent) who consider numbers of bass caught and harvesting bass to be the essence of why they fish for smallmouth bass. Maintaining bass populations with more large bass should appeal to all bass anglers. But the year-long restrictive regulations (such as the Big Bass Program regulations), which will protect more big bass, do not allow harvest of smaller bass, many of which will die of natural causes. Our smallmouth bass populations can accommodate the dual objectives of more big bass and a sustained harvest of smaller bass, but seasons for bass harvest would need to be measured in days, not months, as was previously the case.

Most anglers suggested creel limits lower than the current six bass-per-day regulation. Even though lower creel limits have little real utility in reducing harvest, low creel limits obviously have a lot of appeal and support among anglers. In our efforts to keep regulations simple, we would consider a four-bass-per-day creel limit for bass statewide for streams, rivers, ponds, lakes and reservoirs if broad-based angler support indicated that a lower creel limit were socially important. A socially important function of a lower creel limit would be to lower the angler's expectation of the number of bass harvested as a measure of success.

Two other issues, prominent in correspondence from smallmouth bass anglers, dealt with pollution and law enforcement. A disconcerting number of anglers who agreed that smallmouth bass populations were declining insisted that the decline was a result of pollution and not because of fishing pressure. Please be cautious not to confuse increased awareness through both heightened environmental consciousness and the instant information blitz from television, radio and newspaper, with environmental catastrophe. I do not mean to diminish the need for our concern for the environment, nor the serious effects of pollution on fisheries resources. But the truth is that our rivers and streams have improved from the conditions 20 years ago. We do need to be ever vigilant to sustain the progress that has been made in environmental protection. Angler compliance with regulations to reduce smallmouth bass harvest will increase the number of large bass in our streams and rivers.

Some anglers, alarmed about the decreased numbers of smallmouth bass, attributed the declines to heavy fishing pressure coupled with wanton disregard of our current smallmouth bass regulations. These anglers were very discouraged about the prospects that more restrictive regulations would increase numbers of large bass when, in their opinion, many anglers do not obey existing fishing regulations. The problem of anglers not complying with the regulations is not a failure of enforcement, but rather inadequate education and a weak environmental ethic on the part of the violators. That is not to say that citations issued by waterways conservation officers have no educational value; they certainly do; but rather, we cannot rely on apprehension and prosecution of violators as a means of convincing offenders that the regulations have a real purpose in protecting the values the majority of smallmouth anglers indicated they want—more big bass to catch and release. If you see a violation and do not mention it to the offender or seek to correct it, you might just as well have condoned it. No one should take the law into his own hands, but every individual needs to be educated about the purposes of our regulations.

I want to thank all the anglers who took the time to respond to the questionnaire and to write and share their concerns. Clearly, your responses were used to shape new statewide regulations for stream and river bass fishing and an exciting approach to big bass fishing on the lower Susquehanna River. There are issues remaining and we look forward to resolving them with continued cooperation.

Rickalon L. Hoopes is the Commission Warmwater Unit Leader.

Pennsylvania's Biggest Walleye:

When, Where and How Anglers Caught Them

by Art Michaels

There were 132 Senior and Junior Angler's awards for walleye caught in 1990. The minimum walleye size for a Senior Award is 10 pounds. For a Junior Award, the minimum walleye size is five pounds. Here are the numbers of walleye caught during each month: January, 2. February, 3. March, 2. April, 0. May, 2. June, 20. July, 35. August, 52. September, 13. October, 1. November, 1. December, 1.

A total of 119 of the 132 walleye were caught in Lake Erie, and four were fooled in the Allegheny River. One walleye was taken from each of the following other waterways: Delaware River, Nockamixon Lake, French Creek, Leaser Lake, Lake Wilhelm, Tuscarora Lake Spillway, Allegheny Reservoir, and Pinchot State Park Lake.

Dan Martin

Baits, lures

Anglers caught 64 of these walleye on crankbaits, 35 on spoons, eight on spinners and five on jigs. Nightcrawlers fooled 11, minnows took three, and one walleye was taken each on a sucker and a chub. The lure or bait used was not determined on four applications.

State record

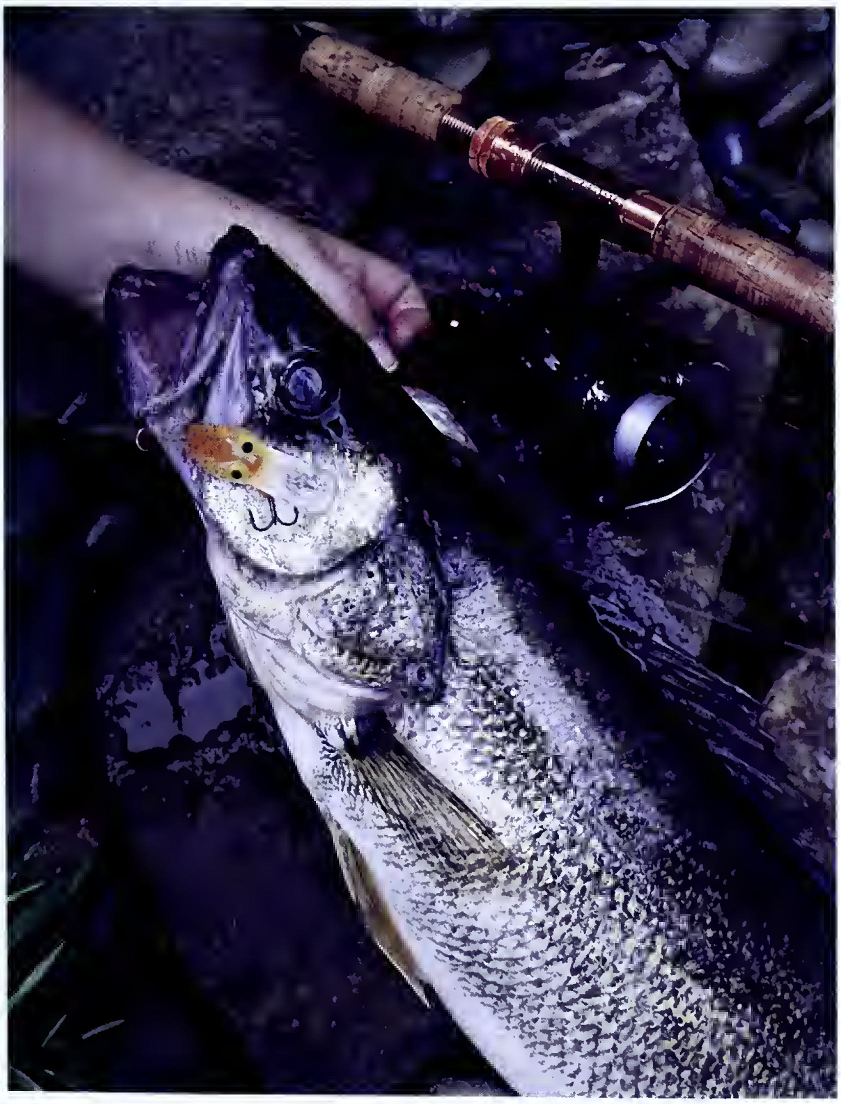
No new state record walleye was caught in 1990, so the current state record stands. Mike Holly, of Bradford, PA, caught the state record walleye in 1980 in the Allegheny Reservoir, Warren County. His state record marble-eye weighed 17 pounds, 9 ounces, and was 36.5 inches long.

Pittsburgher William H. Holmes, Jr., caught the largest walleye of 1990 in the Commission Angler's Awards Program. This 'eye weighed 16 pounds, 4 ounces, and measured 31.5 inches long. Holmes hauled in the hawg from the Armstrong County portion of the Allegheny River on November 7, 1990.

Your citation-sized fish

Catch a Big Fish in Pennsylvania is the title of the four-page brochure that explains the Fish Commission's Angler Recognition Program. The program includes Angler's Awards, Husky Musky Club, Record Fish and Biggest Fish of the Year. The publication has applications, a list of Pennsylvania's current state record fish, and minimum weights in junior and senior categories for eligible fish species.

For a free single copy include a business-sized stamped, self-addressed envelope with requests. Contact: Publications Section, Dept. F, PA Fish Commission, P. O. Box 1673, Harrisburg, PA 17105-1673.



Joe Workosky

Bass on TOP

by Darl Black

Ever pick up a bit of information that sticks in your mind like gum on the sole of a shoe—you just can't shake it loose?

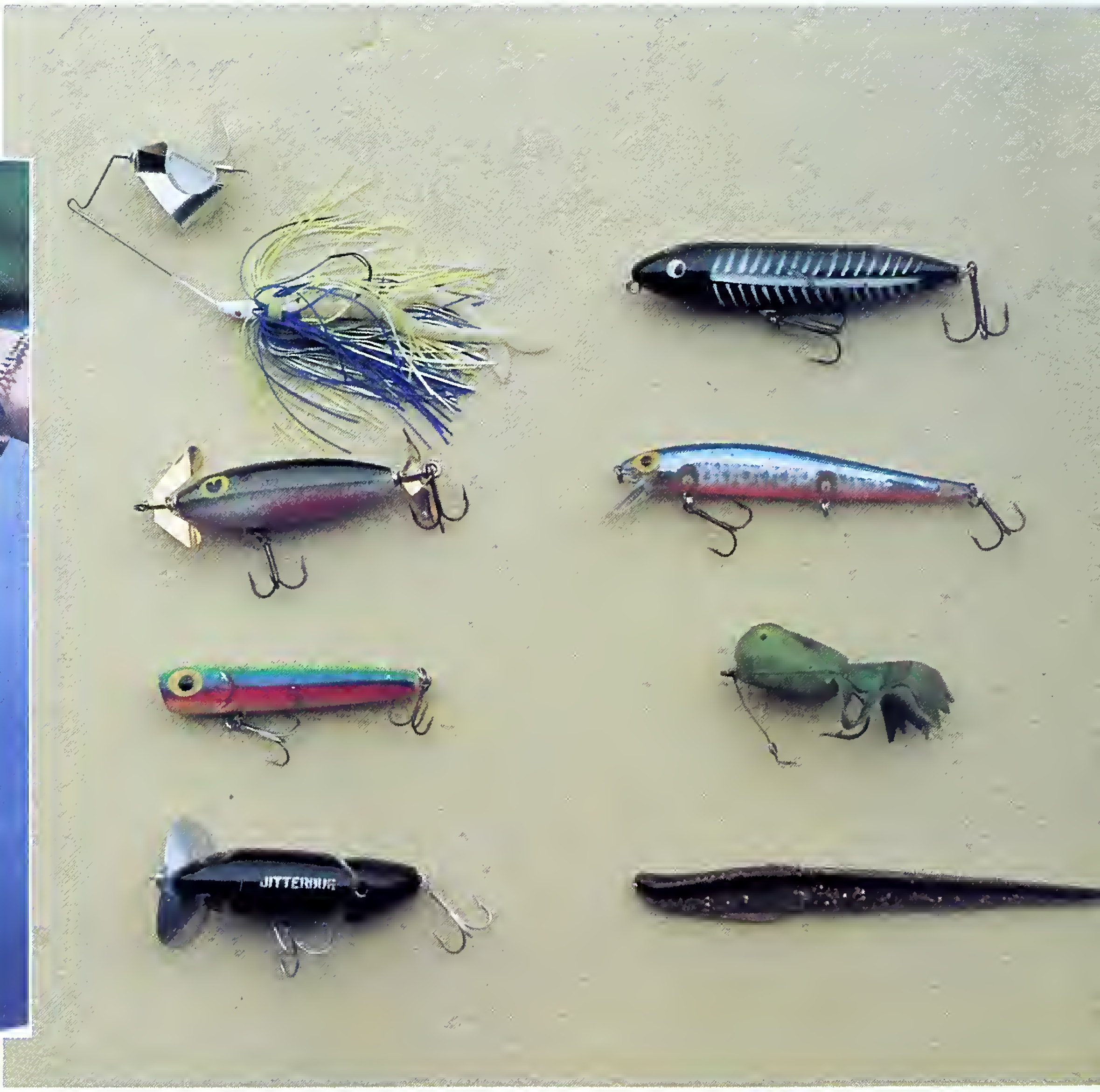
One of those tidbits that has haunted me for years is this old adage: "Topwater baits are effective for bass only five to 10 percent of the time." I have no idea where I first heard that, except it was during the early stages of my fishing education. I had just been introduced to bottom-bouncing plastic worm fishing, and based on the success I was enjoying with worms, the idea that bass fed on the surface only a fraction of the time seemed correct.

A lot of fishermen must have accepted that adage. Over the years I've heard it repeated many times by outdoors writers, pro anglers and everyday fishermen. At some point it probably became a self-fulfilling prophesy. Many bass anglers quit throwing topwater lures, concentrating instead on the plastic worm, jig-n-pig, grub, spinnerbait and crankbait. The romance of bass on top almost faded from memory.

Fortunately, there has been a resurgence in topwater fishing. It is difficult to estimate how effective topwater baits are in day-to-day fishing for every angler, but for me it certainly is much greater than the five percent window suggested by the old saying. By choosing lures and presentations based on an analysis of the situation, you should be able to catch some bass on top as much as 25 to 50 percent of the time.

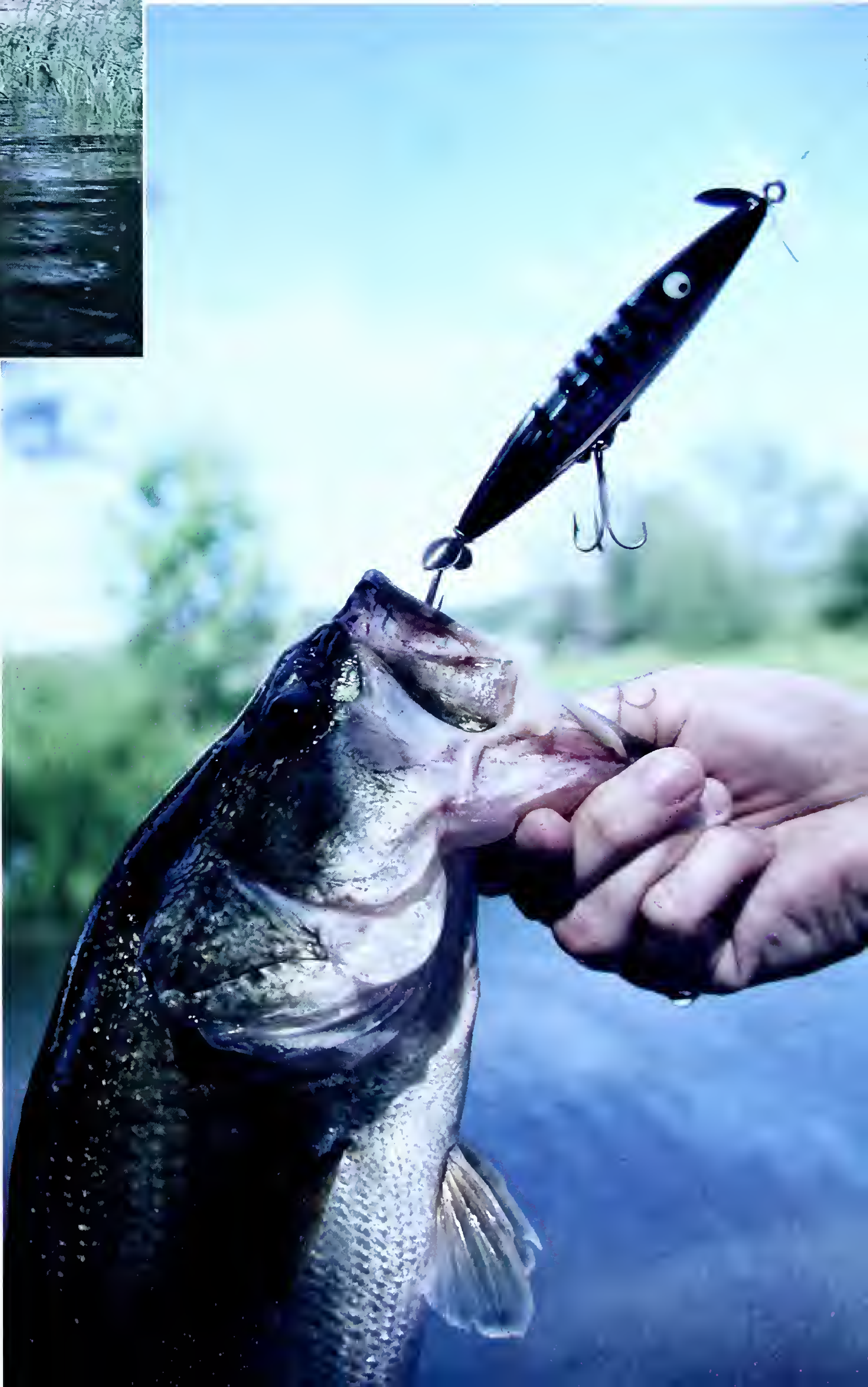
Why topwater?

Bass, particularly largemouth, are shallow-water fish. From the time the water temperature reaches the mid-50s in the spring until it drops below 50 degrees in the fall, a substantial portion of the adult bass



photos by the author

There's been a resurgence in topwater fishing. By choosing lures and presentations based on evaluating the situation, you should be able to catch bass on top as much as 25 to 50 percent of the time.



population can be found searching for food in depths less than 10 feet. Much of a bass's food—minnows, shiners, crustaceans, amphibians and insects—is found around aquatic vegetation, submerged wood and rocky shorelines.

Even in lakes with open-water baitfish like gizzard shad or alewife, bass shadow the forage schools waiting for the opportunity to launch an attack when the bait nears the surface.

A bass does not think about how often it takes food off the surface or from the bottom. It doesn't know for sure what is struggling on the surface, nor does it care as long as it believes it is something edible. A bass lives by instinct—by what it sees and hears.

Bass feed chiefly through sight, sound and vibration. Although bass are nearsighted, their vision is good enough to pick out a silhouette on the surface from 10 or 20 feet away. Bass also have a well-developed inner ear that picks up sounds in the aquatic environment, so noise-generating baits can be detected. The lateral line picks up water disturbances to help bass zero in on prey, so water-displacing baits can be detected. As a result of these combined senses, a hungry bass searching for a bottom-hugging crayfish can still be made aware of something on the surface.

Prime territory for presentation of topwater lures is shallow-water cover. Some bass, whether actively feeding or simply resting, can be found all the time around weedbeds,

Top tip

The most common mistake of topwater fishing is setting the hook too quickly. Usually when a bass charges to the surface in an attempt to grab a lure, water splashes everywhere. That is the excitement of topwater fishing!

The fisherman's immediate reaction is to haul back on the rod. All too often the angler pulls the lure away from the fish. The splashing water should not be a signal to set the hook—it's only a "get set" indicator. Continue working the bait until you feel resistance on the line and the topwater lure has completely disappeared under the water. It will only be a second or two difference, but they are crucial seconds.

Bass may not blow up on stickbaits because the hit often comes just under the surface. But the same mistake occurs because the angler sees the bass move in to strike the lure. Again, wait for the resistance before setting the hook.

One exception is buzzbait fishing. Bass usually don't explode on buzzers. Instead, the fish swims behind the lure and simply overtakes it. The buzzer just disappears from sight without any resistance because the bass is moving in the same direction as the retrieve. Set the hook and hold on.—*DB*

large stumps, docks or fallen trees. These bass may not move from the cover for weeks.

During low light conditions of sunrise, sunset and overcast days, bass from deeper water frequently move onto shallow flats or points (often cover-free) to forage. With bass roving thin water, topwater fishing can be excellent whether the fish are seeking crayfish, insects or minnows.

Suspended open-water bass schools offer a particular challenge for topwater fishing. These fish are keying on baitfish schools. When bass begin "busting bait" out in the middle of nowhere, fast topwater action can take place—if you have a topwater bait rigged and ready. This type of feeding frenzy may take place any time during the day.

The topwater rod

Part of the decline in topwater fishing a few years ago may be attributed to the introduction of the graphite rod. Without a doubt, the graphite rod has been a great asset for worm and jig fishing because it is stiff and super-sensitive, thereby providing a very fast reflex. With graphite, not only can you feel the hit, but the stiff rod lets the angler set the hook quicker.

But those very properties make it a poor choice for topwater fishing. With graphite providing the opportunity for faster reflex, a topwater bait can be pulled right out of the mouth of an attacking bass.

In addition, the stiffness of a graphite rod is unforgiving when fighting a bass on a bulky treble-hook bait. Topwater fish are often lightly hooked. During head-shaking jumps, a bass can easily throw the lure or tear loose if you are using a stiff rod. Thus, an all-graphite rod is not always the best choice for every lure presentation.

Because topwater baits are visible during the retrieve and the strike, sensitivity (feeling what the lure is doing underwater) need not be a consideration. Compared to a worm or jig rod, a topwater rod should be a little softer in the top, offering a slow response and a forgiving taper. Even though some fishermen continue to use a graphite rod for every type of lure, an all-fiberglass or graphite-with-fiberglass tip is the rod of choice for many of today's anglers when it comes to topwater.

Because rod companies lack uniform terminology and standards to describe the power (strength or stiffness rating) and action (tip taper) of a rod, it's difficult to explain exactly what to look for in rods from different manufacturers.

I recommend a moderate to moderate-fast tip action—but certainly not an extra-fast action. In terms of power rating, a medium/light to medium power is needed for lures weighing less than 3/8-ounce and a medium to medium/heavy power for heavier topwater baits.

Casting or spinning outfit? That is a matter of personal choice. I prefer spinning for certain lightweight baits and casting for larger lures.

Rod length? To a degree it depends on the type of topwater bait. For most topwater, I recommend a six- to 6 1/2-foot rod. However, for Zara Spooks and similar splash baits, many anglers prefer a 5 1/2-foot or shorter rod.

Choosing the topwater rod is based on individual preference. It may take experimenting with several rods before you arrive at the one that works best for you.

Lures

There is a wide variety of topwater lures. Each type is unique, so no single retrieve works for all lures or in all situations. Most topwater lures are meant to represent injured baitfish. A few lures are intended to imitate other shallow-water critters.

A buzzbait, or buzzer, is a semi-weedless, large-blade surface disrupter. These baits are designed to be constantly in motion during the retrieve; otherwise, they sink below the surface. To a bass, a buzzer may represent a fleeing baitfish, a swimming amphibian, or a small, struggling land creature. Most anglers tend to work a buzzbait too quickly. Actually, the lure is most productive when retrieved just fast enough to keep the blade churning on the surface. These lures are effective for fishing around wood and weed cover. They are late spring and summer lures. Don't expect many bass on buzzers when the water temperature is below 65 degrees.

A prop bait sports propellers on the front and rear, or sometimes just on the rear. Like a buzzer, a prop bait creates quite a bit of disturbance. But unlike the buzzer, a prop bait floats, so it can be worked slower than a buzzer with long pauses between lure movements. Sweeping side rod movements (moving the plug 12 to 36 inches) with a pause of several seconds between sweeps is one presentation. Prop baits produce bass from late spring to early fall. They are particularly effective for schooling bass in open water.

Poppers and chuggers are among the most popular topwater baits. The pop, splat, or chug sounds result when water is forced into the concave head of the floating plug. Novice anglers tend to work these lures too slowly—one twitch and then a long pause followed by another single twitch. Generally, a bass's curiosity is stirred by four to six short, quick jerks of the rod tip, causing the bait to move several feet. Follow this action with a pause of several seconds before another series of jerks. When this retrieve is executed properly, it often incites non-aggressive bass into striking. This is an excellent summertime topwater offering.

Gurglers are few in number, limited to the Crazy Crawler and Jitterbug. These classic topwater lures differ from most other floating plugs because the better retrieve is slow and steady. Rod tip manipulation, very important in presentation of most other topwater plugs, is not a significant factor with these offerings. Gurglers work best after dark when a steady retrieve lets bass zero in on the target much easier than they can find a lure worked in an erratic manner.

Splash baits are among the most difficult topwater lures to master—but they can be most productive. Basically cigar-shaped, there are no propellers, lip, concave head or other noise-generating item or design. The action is rhythmic side-to-side darting, generated only by combined rod-and-reel manipulation. The angler must snap the rod sharply while turning the reel handle in a stop-and-go technique, allowing enough slack line for the plug to turn left and then right. The side-to-side behavior is similar to that of a wounded baitfish. A slow rhythm produces an almost silent action, and a faster rhythm produces a lot of splash.

This lure has a longer "season" than any other topwater offering. It catches fish in early spring and well into the fall. I have caught bass on a splash bait when the surface temperature was only in the high 40s.

Stickbaits are also called twitch baits and jerkbaits. They are the long minnow-type lure with a short diving lip. Presentation techniques vary considerably with stickbaits. Everyone develops a particular style. The rod is used to move the lure either with delicate twitches or sharp jerks. The more pronounced the rod snap, the deeper the lure dives (from barely under the surface to a depth of perhaps 12 inches). The lure may be permitted to float back to the surface, or the angler can continue to jerk the rod to prevent the bait from completely surfacing. Stickbaits produce around shallow cover as well as in open water for suspended schooling bass. It is a versatile spring, summer and fall lure.

Surface slop baits are a group of hard plastic/wood surface spoons and soft frogs or rats designed specifically for matted vegetation. In shallow water areas where weeds congest the surface, largemouths are right at home under the mat. Ordinary surface lures are completely useless. Slop baits are designed with protected hooks to move through the emergent vegetation. A slow, steady retrieve is usually employed. Dragging the bait over the weed mat creates a wake that bass detect, perhaps mistaking it for a frog, snake, baby muskrat or whatever. With some baits a hopping or popping retrieve may be used. These are strictly summer topwater lures. And because of the environment in which they are typically used, these baits are one of the best topwater lures when bass elsewhere are shut off.

The soft stickbait is the newest surface bait on the market. Slug-Go is the original soft stickbait. It is a slow-sinking, uniquely shaped fat worm. Rigged modified Texas-style on a worm hook, the lure is moderately weedless. Fished with a rod-twitching or snapping retrieve, it has what is often called an out-of-control action. With practice the angler can "walk-the-dog" like a splash bait or dive-n-dart like a traditional stickbait.

Be sure to put some fun back into your bass fishing this summer. Fish topwater lures!

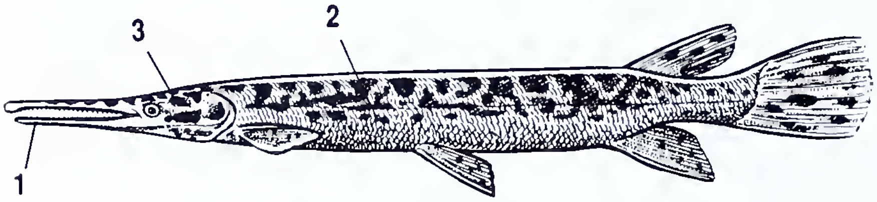
KidsPage!

by Steve Ulsh

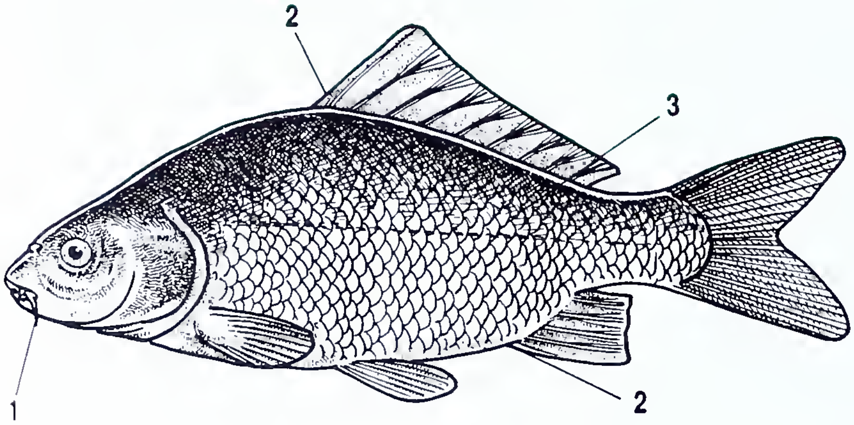
Common But Different

Fish are cold-blooded creatures that live in water. In most cases, they have scales, fins for balance and locomotion, and gills for breathing. If they were alike in every way, there would be only one kind of fish. Differences in shape, color, types of fins and other characteristics make the difference in species.

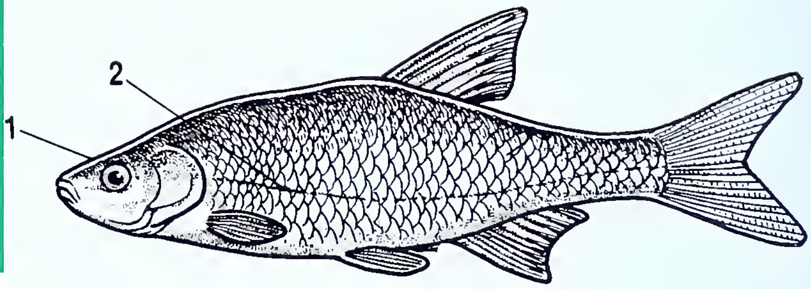
Can you identify the fish shown below by the descriptions given for each?



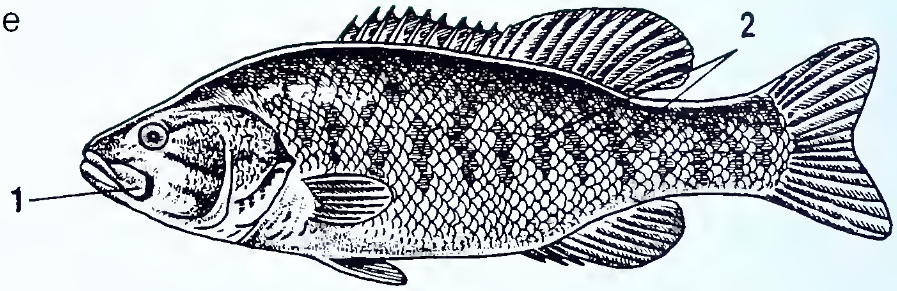
1. Jaws form a long snout.
2. Body covered with thick, bony scales.
3. Upper part of body covered with large, round scales.



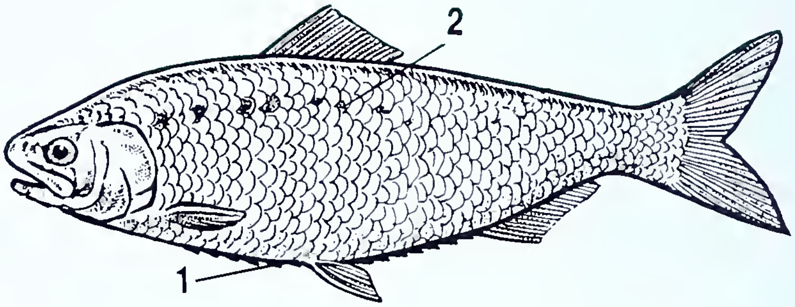
1. Two pairs of barbels in mouth area.
2. Toothed spines on some fins.
3. Heavy scales along sides.



1. Head small compared to body.
2. Lateral line curves downward.



1. Upper jaw does not extend beyond the eye.
2. Dark, vertical bars on side.



1. Saw-toothed edge on belly scales.
2. Few faint spots on side.

Answers
1. Spotted gar, 2. Carp, 3. Golden shiner, 4. Smallmouth bass, 5. American shad

The Flies of June

by Jim Bashline

When experienced fly anglers approach their favorite streams in June, they are usually anxious. Now is when the largest mayflies of the season appear, and with this happening the larger trout respond to a rich assortment of surface food. There will be Green Drakes, leadwings, Gray Drakes, some leftover Gray Foxes and heaven knows what else. During one June or another, I've seen every common mayfly that hatches in Pennsylvania.

June is the month when any fly in the box could be a winner. The problem—and it's a delightful one—is that the wide range of insects and their sizes often cause trout to become individually selective.

I can now hear the novice fly angler groan, "Oh no, don't tell me this is going to be another esoteric treatise on how a trout's eyeballs are inversely affected by sunlight bouncing off the polar ice cap or some such high-falutin' theory that only three people in the world can understand."

This is nothing like that at all, because a half-century of fly fishing has me convinced that fly fishing for trout is not nearly as complicated as it's often made out to be. Fish are not really very smart. Our brains are several hundred times larger than theirs, thus giving humans an obvious advantage—or at least it should.

Presentation

The flies we tie on are important, to be sure, but they're never as important as presentation. If you cast your fly in a way that makes it kiss the water softly, have it float without drag for more than three feet and pick it up without an audible "slurp," you're good enough to catch 30 percent of the rising trout you see—an acceptable average for most of us.

More good news is that you'll probably see more rising trout in June than during any other month. You will because the trout, like you, wonder what in the world will come floating over them next. They've become so accustomed to feeding on such a wide variety of insects that pattern or size is not likely to spook them. Sloppy casting and noisy wading will. Caution, the trout's substitute for intelligence, is what prevents a strike from happening on every cast because the fishing gods will not allow us to cast perfectly every time.

Now then, to get back to that business of individual selectivity: Certain fish tend to home in on a specific size or color of mayfly (when a selection is present) and it can be a study in frustration trying to discover which is the "right" pattern. At times, size does the trick, or it may be color, or both.

If you actually see a particular fish picking out the odd Green Drake or lead-wing, the clue is obvious. If several larger flies drift over the spot without a ripple, the last rise was probably to something smaller—perhaps a Sulfur or a Blue-Wing Olive.

Don't be slow about changing flies in June. Tossing the same pattern over a rising fish for three dozen casts is wasted effort. If you get a half-dozen good floats over the hot spot with no response—change to a different color or size.

All-purpose dry flies

Over the years I've settled on three patterns as my "all- purpose" June dry flies. They are the Gray Drake, the Bashline Beaverkill (BB) and the Omni-Beetle. The sketches of these patterns prove that they're not complicated flies to make or order from your friendly fly tier. They work on every Pennsylvania stream I've ever tried them on.

The Gray Drake covers the large flies and the BB does a decent job of suggesting many of the smaller editions. Both of these have a hint of yellow, which I think is important at this time of year. Many female "June" flies develop a prominent egg sac that is yellow or favors yellow. That the trout see this color and are attracted to it has been well-documented.

A few turns of yellow ostrich herl does the trick on the BB. Ostrich herl is a nearly forgotten material in these days of poly-this and plastic-that. It's a soft, delicate, natural fiber. When wet, it looks more like an egg sac than any synthetic I've seen.

A yellow thread ribbing encircles the Gray Drake's muskrat fur body, and again this hint of yellow seems to be important. Until I added the yellow thread, my Gray Drakes were only marginally successful. The hackle is nothing more than good quality grizzly and the wings are calf tail dyed a blue-dun gray. The head thread should be yellow, too.

The Gray Drake works best in sizes 10 and 12, and the BB is most useful in sizes 14, 16 and 18. Tie the Gray Drake on 2X long hooks and the BB on regular length hooks.

Omni-Beetle

The Omni-Beetle really is a "bug" of June and can be made in sizes from 8 to 18. When the fickle fish can't make up their minds which fly to pick from the June smorgasbord, tying on a beetle of some sort is as close to a guarantee as a fly angler can manage.

Trout are fond of beetles of all flavors and sizes, and the convenient part of it is that most of them are black or near black. Trout take a blackish beetle when they can't be coaxed to come to anything else, and they seldom allow a real one to float by.

The "nature duplicators" among today's cadre of accomplished fly tiers are fashioning beetles that look good enough to crawl away. They'll all catch fish, but the one I use is so easy to make, I could teach my dog to tie it.

Cut a piece of styrofoam from one of those little packing "peanuts," which seem to be in every shipping carton in the world, to about the length of the hook shank. Wind the thread around it, compressing the foam to an oval shape, completely covering the white foam with black thread. Apply some head cement and rib the back half of the body with dark-green peacock herl. Wind on four turns of black hackle. Rib the front half with peacock and finish the head. Presto—an Omni-Beetle!

The beauty of the beetle is that even if it doesn't float well, it won't matter much of the time. Trout strike a sunken beetle as readily as they take a floating one. You just have to be more alert to see the leader twitch as a strike indicator. If you want to see the strike, dress the beetle more often with flotant than a well-hackled dry fly. That's a small price to pay for additional "customers."

Please don't infer that these three patterns are the only flies I use during June. If the trout are actively feeding on a pale-cream Light Cahill, it would be stupid not to tie one on.

Gullibility

About now is a good time to insert some observations on the gullibility of stocked trout versus stream-born or native fish. We've all listened to gray-bearded anglers, as well as those barely old enough to shave, expound on the relative merits of native and hatchery trout. It's no great secret that fish with only a few days in public fishing waters are hungry and not well-schooled on what to avoid. That a lot of early season trout are taken on marshmallows and canned corn is proof enough.

The picture changes dramatically by the time June arrives. Some anglers, including me, have long believed that all trout react in a monkey-see, monkey-do fashion. When hatching flies, wiggling bugs, creeping crayfish and darting minnows are grabbed by native fish and the carry-over trout around them, the recent arrivals wise up in a hurry. Their actions seem to say, "hey, this is good stuff and some of it is better and easier to catch than others."

Trout also discover that some floating flies, the ones that don't "act" right, are also equipped with annoying little bits of steel.

Are stocked trout of the year easier to fool on flies? Yes, I think so, but not by a wide margin. In time they can become even more cautious than native fish. On waters restricted to flies only this is clearly evident by the number of last-second rejections.

Speaking of fish intelligence, it seems that individual fish display varying levels of it. Where catch-and-release regulations are in place, some fish are caught with unusual frequency while others don't fall for the bogus bugs very often—if at all. I once enjoyed some "pet" brook trout in a half-acre pond. Over a period of five years most of the dozen or so brookies there grew to impressive size and were caught several times each. Pluto, the largest of them all, was a full 20 inches long and the stupidest fish I ever saw. He was such an easy mark, it was absurd. Any large fly cast his way would be instantly gulped. I always figured he was big because he'd eat anything. I and others caught and released Pluto at least 40 times. He never learned. In a wild situation, such fish don't last long enough to grow much. They end up in the skillet at a tender age.

Perfect water conditions

Some of the liveliest wet fly and nymph fishing imaginable can occur in June if a sudden downpour discolors the water. The perfect water condition is a shade of weak tea with just a dash of cream. It's a bit too cloudy for the trout to see surface food clearly but just right for spotting nymphs rising from the bottom. A warm June rain seems to trigger nymphal activity and the trout can go slightly nuts as the water around them comes alive with easy prey. If a hump or bulge on the surface of the water is spotted or as G.E.M. Skues wrote, "you see that little brown wink under water," a pair or trio of wet flies is the right course of action. Cast them across and downstream and jiggle-jiggle jerk. The humps and winks indicate nymphs swimming close to the surface and conventional wet flies are the correct tactical weapons.

Wet fly favorites

For June wet-fly fishing, my three top choices are traditional favorites: Light Cahill, Wickham's Fancy and the nearly infallible Gold-Ribbed Hare's Ear, all in size 12.

I am not fond of fishing nymphs using the currently popular "dead drift" method, which calls for bouncing a single nymph along the bottom with some lead pinched on the leader. But it can be highly effective during or just after a June shower. Such fishing calls for getting close to the run or drift to be fished, lobbing the weighted nymph upstream and then following its progress with the rod tip as it ticks the bottom. This calls for keeping a sharp eye on the line or tab of wool or plastic attached to the leader (a strike indicator). If you see the slightest movement, set the hook. The "strike" will be the bottom some of the time, but often enough the line will come up tight with the *chug-chug-chug* of a heavy trout.

Muddler Minnow

I've written about the Muddler Minnow so many times and with such glowing praise that some readers must think it's the only streamer I use. Fact is, I do use the Muddler a lot but not just because it's a streamer fly. The Muddler, like the ancient Hornberg, is really an all-purpose fly. Fished dry, a size 8 or 10 Muddler is a decent grasshopper suggestion (so is the Hornberg). When fished at mid-depth it looks like a host of small minnow species. When scooted or crawled along the bottom it does a highly respectable job of looking like a sculpin minnow or large nymph.

Streamers of all colors and styles are often thought of as being useful only during periods of high or discolored water. Well, they're good then, to be sure, but all trout, and particularly large trout, seldom turn down an easy chance at grabbing such a good-sized bite of protein.

This is also true of fish not long out of the hatchery. Such fish are highly attracted to brighter colors, and the well-tested Mickey Finn and the reliable Gray Ghost, with a brilliant orange body, often do the trick in June. Some stocked fish turn on to surface insects before others, and the slow learners are usually much more interested in something larger.

If you see a fish following your fly or see a flash, don't slow the retrieve—speed it up. Competition for food is keen in hatcheries, just as it is in the stream environment, and trout have no interest in "sharing" with their neighbors. If it appears that a tasty morsel is going to escape, they'll increase their effort to catch it. Slowing the retrieve to give them a better chance at capturing the false little fish is the wrong approach. Natural prey doesn't act that way and the trout know it.

Rods, lines

Experienced fly rodders reading this are already in a personal mind set about which rod and line weight to use for dry and wet flies, streamers and nymphs. Most anglers with more than a few seasons on their fishing odometers have special rods for special purposes. How many of these one owns is regulated by dedication to the sport, sophistication of the approach and of course, the checkbook balance.

The "flea" rods of the 1960s and 1970s are now but a memory. Some anglers use rods of less than six feet with practiced ease, but casting such rods well requires perfect timing. For anglers of ordinary ability, a longer rod, one of 7 1/2 feet or more, is a useful tool.

It's easy and fun for those of us who are a little gray around the edges to wax eloquent about our treasured bamboo rods. Confession is good for the soul, however, and the truth is that exaltations about wooden rods are merely exercises in nostalgia. The modern graphite sticks measuring eight or 8 1/2 feet long are ideal Pennsylvania fly rods. Choose one that tosses a 5- or 6-weight line and you won't go wrong.

To "soften" the action just a bit—a great help when fishing wet flies—simply change to a 7-weight line. It works wonders. The slower action hooks more fish, which is why the veterans still love their split cane rods.

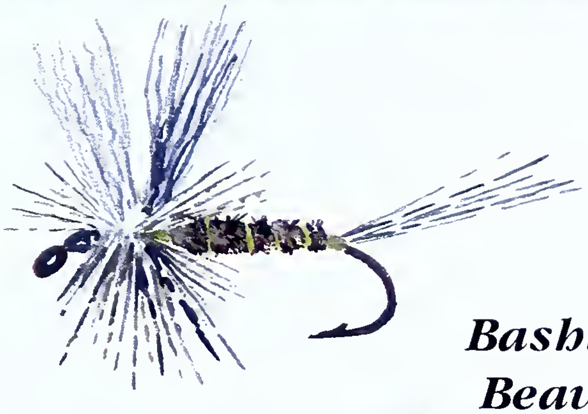
"Mending the line," which means tossing some line from the water in an upstream direction to allow a longer drag-free float, is much easier done with an eight-foot rod than with one of six feet or less. Striking and playing a fish, wiggling and jiggling wet flies, swimming a streamer, and of course, managing a cast over 40 feet are all better accomplished with a longer rod.

A nagging argument about which month is best when trout fishing is the sole consideration has caused many anglers minor grief. Not world-class grief mind you—we should all be so lucky to have problems of such magnitude—but it is worth some thought. I love May, mostly because of cool evenings, warm (but not hot) days and the trout's cooperative attitude as they feed all day.

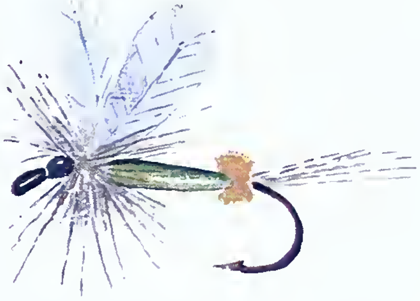
September and October have a lot going for them, too, and then there are the white flies of August. You can see what we're up against in declaring a favorite month!

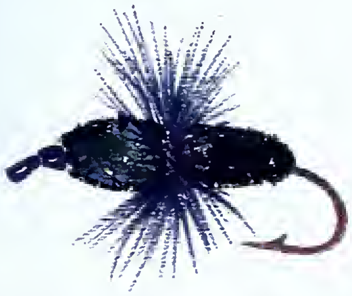
But there are plenty of flies around the first half of June, and then during the last half, night fishing take center stage. Since my brain has long been warped in that direction, June gets very high marks. But then, night fishing is another story for another time.

Gray Drake



Bashline Beaverkill





Omni-Beetle

watercolors by Jim Bashline

Live Bait for Bass

by Jim Gronaw

photos by the author

Among today's hi-tech, run-and-gun, tournament-style bass fishing fraternity, few anglers use the term "live bait" in the same sentence with "bass." To many the idea that others use natural, live offerings to fool gamefish seems barbaric, almost criminal. Some fishermen have ethical problems using bait, and others simply don't want to fool with these writhing creatures. Nevertheless, these ideas are mysteries to those who routinely catch largemouths and smallmouths on the real McCoy. With the growing onslaught of lead, metal and plastic baits, many fishermen have never known the effectiveness of the "real thing."

Some anglers many believe that live-bait fishing is "cheating" or "kid's stuff." But the simple fact is that it works, and works well. True, bait does cover up a lot of angler flaws, and perhaps an angler's pride is damaged because of this idea. Still, it takes as much if not more skill to deliver live baits properly than frantically to cast and retrieve crankbaits and spinnerbaits. Success comes in many forms and among today's bass fishing strategies, effective live-bait fishing has almost become a lost art.

In all but very few situations, nightcrawlers, minnows and crayfish cover all the bass fishing bases in Keystone State waters. There are times when one or the other of these offerings outproduces the rest. Indeed, each bait has its own time and place.

Nightcrawlers

Big, juicy nightcrawlers are probably the most misunderstood bait for bass, but so many anglers regularly use plastic worms in an effort to duplicate this great natural forage. By comparison, 'crawlers are relatively easy to catch and keep for weeks at a time when properly stored in a refrigerator, within rich topsoil in styrofoam containers. They are durable and versatile bait and are available to all for the picking.

Many anglers complain that the use of these overgrown earthworms draws annoying, pecking strikes from smaller panfish species. This may be true, but when your panfish bites far outnumber the bass takes, then it's obviously time to relocate. Live nightcrawlers seldom wash into a lake or river and reach a depth of 10 to 12 feet before they're consumed. Yet, deep-jigging walleye anglers have long known the effectiveness of using them. Bass anglers can expect success using 'crawlers in the same deep weed edges, rockpiles, stump flats or exposed timber where they would otherwise toss artificials. In other words, fish 'crawlers within classic bass holding structures, not in the panfish-filled shallows.

One of the most effective rigs is to fish a 'crawler on a floating jighead with a stinger hook. The stinger is a size 6 baitholder hook tied to six inches of 10-pound-test mono and then knotted to the eye of the floating jighead. When fished 16 to 20 inches behind a 3/16-ounce baitwalker sinker, this combo becomes a winner on weed lines or stump flats. Pierce the head of the nightcrawler with the jighook, and place the stinger in the lower third of the bait.

Substitute a standard bullet-head weight that you would use for Texas-rigging plastic worms for the baitwalker sinker. This elevates the floating bait off the bottom. At the slightest indication of a strike, allow the bass to run a few feet. Then set the hook on a tight, drawn line.

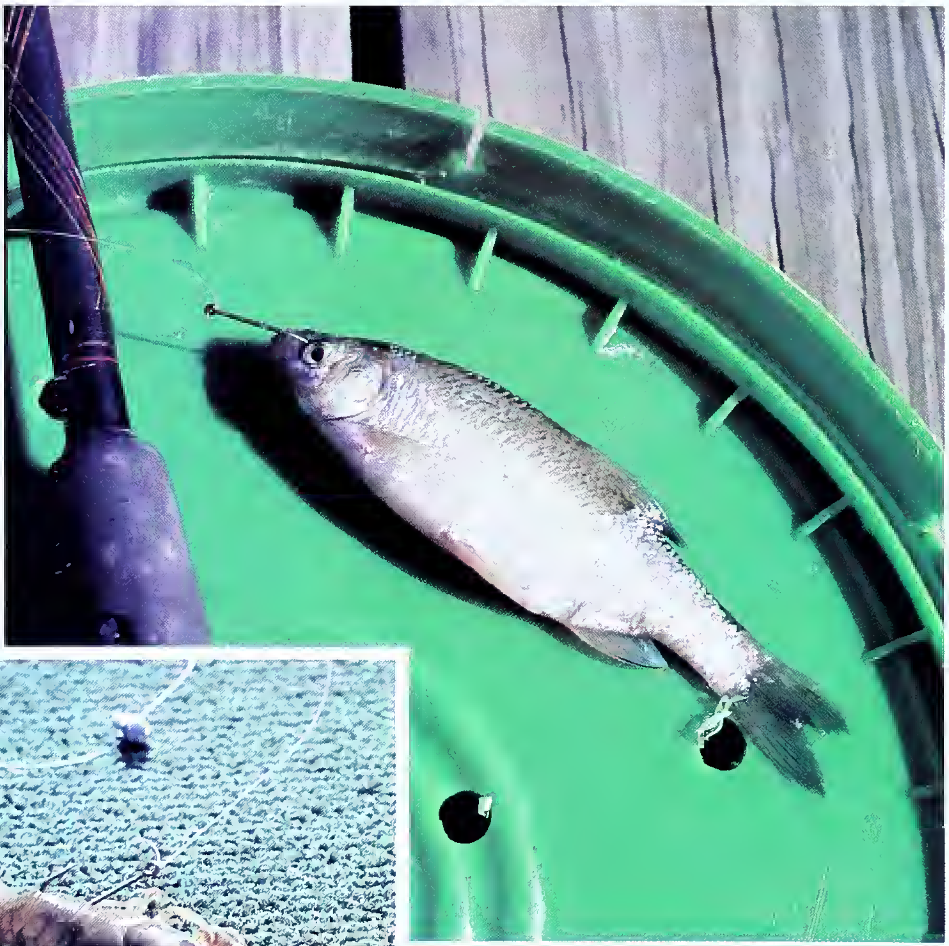
With the use of the stinger hook, an angler can strike quickly and avoid hooking bass deeply. This quick-strike rig ensures reliable catch-and-release fishing because most fish are lip-hooked. There's no long, anxious wait, wondering whether your fish has the bait or not. Just set the hook and he's there.

Charles Wallace and I further proved the productivity of nightcrawlers at York County's Long Arm Dam. Using the quick-strike, floating jigheads with big 'crawlers, Charles caught and released 4 $^{1}/_{2}$- and 5-pound largemouths, and I returned a powerful 4-pound smallmouth. These fish were our largest during two June mornings of "worming" the natural way. Other lure-tossing anglers were surprised, even skeptical, about our success with these baits.

Minnows

Minnow and shiner species, especially in rivers and streams, are great natural baits because through sheer numbers they are often the most dominant forage available to bass.

Although many anglers use minnows bought in baitshops, by far the better



Hook large minnows (above) through the eye sockets. Hook crayfish (left) through the tail.

In most situations, nightcrawlers, minnows and crayfish cover all the bass fishing bases in Pennsylvania.

baitfish are those that are native to the river system you are fishing. It can be tough catching and keeping minnows in the heat of the summer. But the time and effort spent immersing them in a stream overnight is often worth the results the next morning. Store-bought bait is okay, but natural, native bait is better.

Most anglers make the mistake of using too much weight to deliver minnows, especially in moving water where quite the opposite is needed for success. The more weight that hinders a lively baitfish, the less likely it appears natural to a bass. In all but very few situations, the only weights needed in rivers and streams are splitshot. In lakes or reservoirs you can use the same baitwalker rig described for nightcrawlers and slow-troll or even "still fish" a live bait, thus attaining the needed depth with the use of the 3/16-ounce baitwalker or bullet weight.

The most effective rig I use for Susquehanna smallmouths is quite simple. Tie a sharp (hone, if necessary) size 4 baitholder hook directly to your line. About 16 inches up from the hook, attach reusable "rocker" splitshot. If more weight is needed, spread your shot out, say six inches apart, to obtain the needed weight. A single large shot may work, but the unnatural "heavy" spot on your line may cause a striking bass to drop the minnow. Evenly distributed, smaller shot are less likely to be detected, so you'll get more takes and hookups.

The secret to making this simple rig work in currents is to be careful where you cast it. Rather than have a twirling baitfish anchored to the bottom in swift water, you want your offering to "deliver" in a natural drift that culminates in a lively baitfish coming within range of a feeding smallmouth. You need to read currents correctly and you need time on the water to make this simple rig work. When fishing minnows this way, hook them through both lips or through the eye sockets. By hooking them through the eyes, the solid skull portion allows you to cast and fish the bait longer.

Crayfish

Wherever they occur, crayfish are likely to be the preferred forage of most largemouth bass and smallmouth bass. These crustaceans are a high-protein food source and especially so in their soft-shell form before their calcium salts turn to a hardened state. When crayfish populations are present, they become a "must" bait for bass. Lure companies are constantly creating artificials to duplicate them accurately.

Because of their very nature, crayfish should be bottom-fished around rocks. This translates to lots of hangups and lost terminal gear. Many anglers just aren't cut out for this type of fishing. But the financial loss of hooks and sinkers is minimal when compared to the results of this great natural bait.

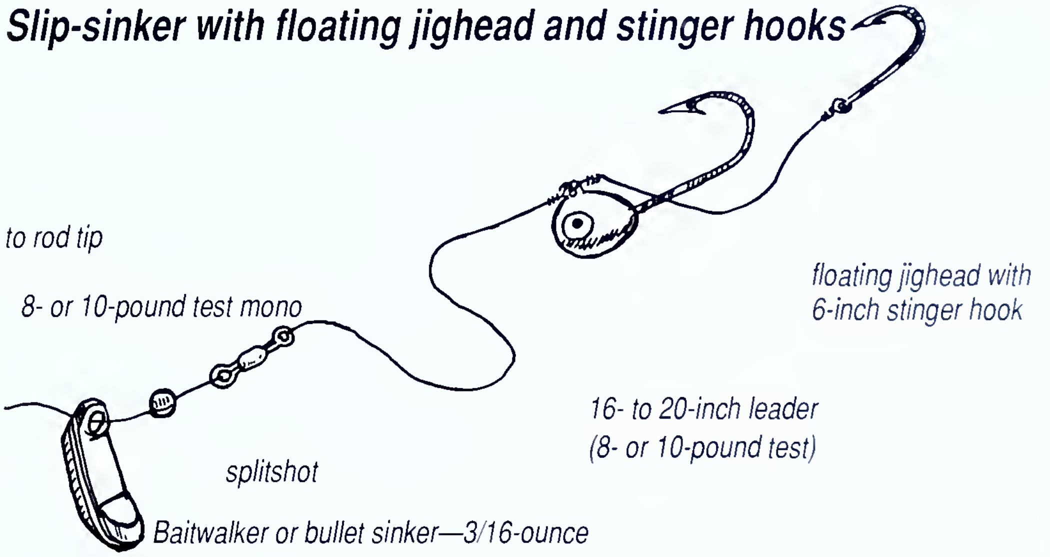
The same rigs for minnows and nightcrawlers work with crayfish. For lakes and reservoirs, the slip-sinker rig is good and allows slow drifting or trolling over large rocky areas and points. For rivers and streams, the light-line/splitshot method is more the ticket. But there are times when these mini-lobsters should be fished with no weight at all.

Often in late summer when the water is low and clear, deep water is actually no more than three feet in wadable smallmouth bass streams. The upper reaches of the Conowago and Marsh creeks in York County, for instance, are typical. Low, clear water usually means wary, skittish fish. Under these circumstances, 1 1/2- to 3-inch crayfish often make discriminating bass lose their caution. Larger crayfish have big, strong claws that can ward off feeding bass. Stick to the smaller crustaceans and you'll get more pickups and hookups.

The free-lining technique is to bait crays through the abdomen with a size 4 or 6 baitholder hook. Use no weight because the bait will quickly scurry to the bottom for the sanctuary of rocks. For this reason, you should move the bait every 10 to 15 seconds to prevent its hiding among rocks, leading to hangups. It also helps to remove the large claws to help emit natural crayfish aroma and to make the bait easier for bass to grab. Additionally, use low-visibility line when waters are low and clear.

Live baits for bass are not new, and they are certainly not cure-alls in every situation. But once you learn to deliver these baits in a natural manner, you'll find that the "real thing" has a place in your bass fishing arsenal.

Slip-sinker with floating jighead and stinger hooks



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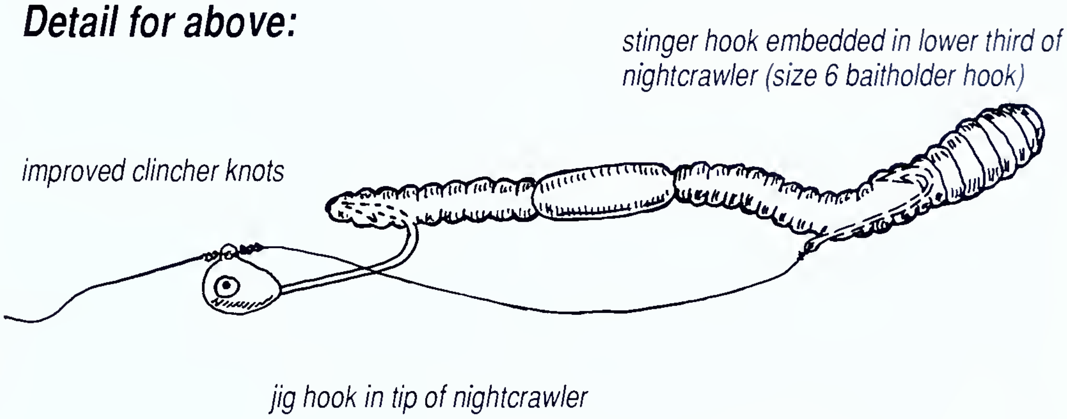
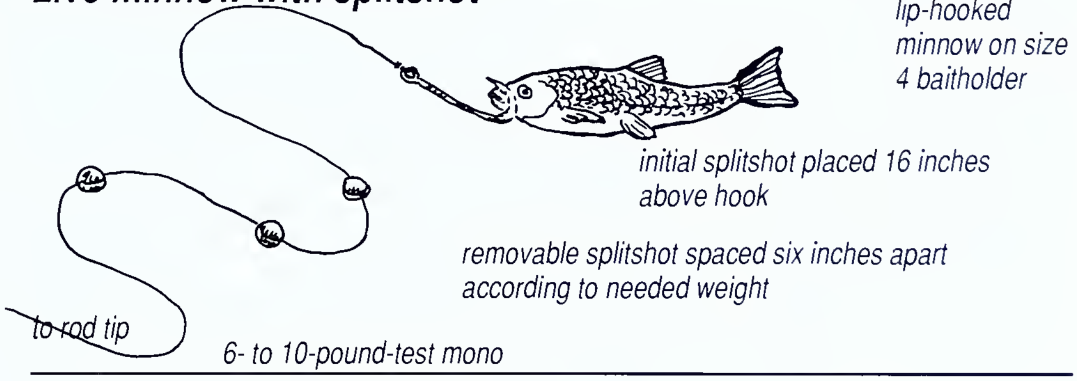
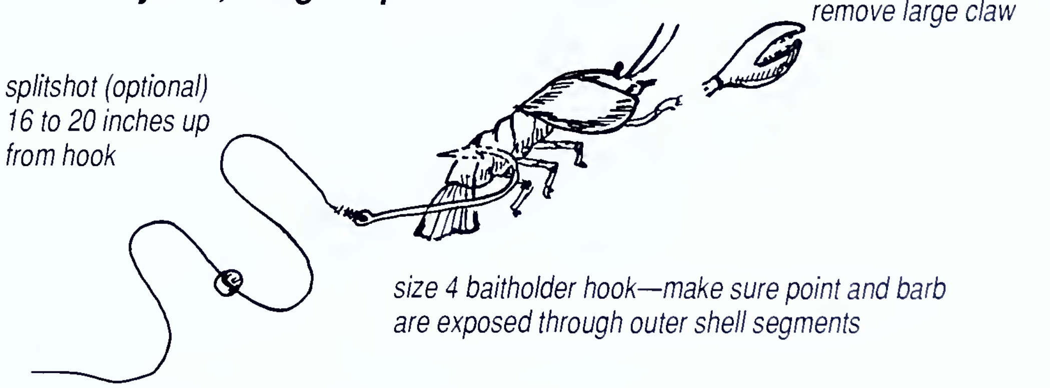

stinger hook embedded in lower third of
nightcrawler (size 6 baitholder hook)
improved clincher knots
jig hook in tip of nightcrawler

Live minnow with splitshot

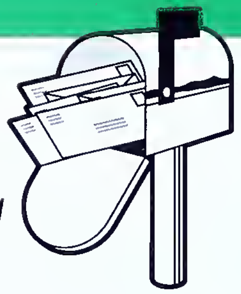

lip-hooked
minnow on size
4 baitholder
initial splitshot placed 16 inches
above hook
removable splitshot spaced six inches apart
according to needed weight
to rod tip
6- to 10-pound-test mono

Live crayfish, weight optional


remove large claw
splitshot (optional)
16 to 20 inches up
from hook
size 4 baitholder hook—make sure point and barb
are exposed through outer shell segments

Helpful hints: *On slip-sinker rigs, you can set the hook quickly with a high percentage of hookups. Live minnows can be hooked through the eye sockets for a better hold. Crayfish should be moved to prevent their harboring beneath rocks. Always make sure hooks are razor-sharp. By keeping rigs simple, your baits appear natural and draw more strikes.*

MAIL



Raising registration fees

I go along with you that there is a need for a raise in the motorboat registration fees if there hasn't been one since 1963. I am 65 years old and I have a 2.5-horsepower motor for my fishing boat. I do not think I should pay the same fee as someone who has a 50 or 60 and up horsepower motor.

I hope you take this into consideration when you raise the fees.—*Paul Kuhs, Wind Gap, PA.*

The Commission has been proposing increases in boat registration fees for many years. The first proposal was in 1974 for a modest 50-cent increase. Over time, the form and the size of the proposed increases have changed as we attempted to find a formula that was acceptable to everyone. For a while we were supporting an across-the-board fee. The logic was that it costs the same to issue a registration, regardless of the length of the boat. Additionally, because the tax collected on fuel used in boats was refunded to the Commission, bigger boats automatically contributed more to Commission programs.

Recently the Commission has returned to the original concept of a tiered fee schedule. At its meeting last November, the Commission authorized the staff to approach the Legislature with a proposal that would change registration fees as follows: Unpowered boats, $5; motorboats less than 16 feet, $10; motorboats 16 feet to less than 20 feet, $15; and motorboats 20 feet and over, $20. The schedule builds equity into the system. We are hopeful that it will be acceptable to the Legislature. The Boat Fund must receive additional revenue before 1992 to remain solvent.

A registration fee increase requires legislative action, so a letter to your local representative and senator expressing your support of an increase is timely and appropriate. Thank you for your support.—*John F. Simmons, Director, Bureau of Boating.*

Blue crab concerns

I am confused. Page 37 of the *1991 Summary of Regulations and Laws* sets size and creel limits for blue crab and the methods with which they can be taken on the Delaware River and estuary, but your bans and advisories list the blue crab in the Delaware as harmful because of PCBs and chlordane. Perhaps the bans and advisories should be made part of the summary of regulations.—*Joe Turner, Langhorne, PA.*

The relatively recent revival of the Delaware estuary is not confusing to us, but rather frustrating. Those of us who have been working with the lower Delaware, mostly Area Fisheries Manager Michael Kaufmann and me, are highly encouraged by the return back into the estuary of some 60 or more species of finfishes, shellfishes and crustaceans. Major species such as American shad and river herring are expanding their populations as are the striped bass and the blue crab.

The frustrating part is that as we observe all these healthy-looking specimens in an area long devoid of most desirable species, because of sewage and industrial waste pollution, we find after sampling their flesh that they contain some contaminants at or exceeding U.S. Food and Drug Administration (FDA) action levels.

The action to which you refer is really not a ban, making the harvest of blue crabs unlawful, but rather is an advisory issued to let you and the public know the results of contaminant analyses performed and how they relate to action levels. If action levels are exceeded in edible fish flesh and you consume such fish, your health may be endangered, based on the FDA rationale for the action levels.

Because advisories can be lifted or imposed relatively quickly, depending on subsequent and more current samplings, it is really not practical to include such advisories in a publication made available only once a year.

Your remaining question seems to be: Why create regulations regarding limits and methods of taking blue crabs when they are contaminated? The answer simply is that we are interested in further restoration and expansion of their population to a time when contaminants will not be a deterrent in their harvest. Some harvest may now legally be made, so having no regulations is not an acceptable management strategy.

We appreciate your letter and concern and hope that you will be outspoken against further pollution to appropriate agencies handling these problems so that we can all benefit.—*Robert B. Hesser, Environmental and Technical Liaison.*

Slobs

While canoeing and walking along local waterways, I become enraged by the amount of litter left behind by people, including fishermen.

Several times a week I walk to a local pond and pick up all the trash I find. A few days later, there is always more. Cigarette butts and packs, soda and beer cans and bottles, styrofoam worm containers, discarded monofilament line, and lure and snelled hook packaging seems to be the most common trash.

These people are not sportsmen. They are slobs.

I realize that most *Angler* readers are not slobs, but they have seen them in the past and will see them again.

Please publish an article, even a cover photo, on the litter problem. This article should include steps a true sportsman can legally take when catching a slob. I know what I would like to do to a slob, but it is not legal.—*William Cannon, Pottstown, PA.*

Proper disposal of line

One of your "Anglers Notebook" items said, "Always discard fishing line in a bag placed in a trash can or proper receptacle. Line left along the stream, lake, or shore can tangle and kill small birds and animals. In the water, it can catch turtles and birds and cause extensive damage to outboard lower units and prop seals."

I agree on the damage to wildlife and property that discarded fishing line can do. I do not agree that discarding fishing line in a bag and then putting it in a trash can is the proper answer to this problem because small animals and birds scavenging in waste disposal dumps could still become ensnared.

Putting the discarded line in a bag and bringing it home to be burnt outdoors in a safe place using the flame of a propane torch does a more effective job of rendering that "junk line," especially monofilament line, totally harmless.—*Ronald H. Brexel, Jamesburg, NJ.*

Fly rodding for carp

I am writing to tell of my experience fly fishing for carp on the Tulpehocken Creek near Reading.

Every mid-April for the last three years I have gone up to the Tulp to pursue spawning carp at the fly-fishing-only stretch. The limestone water provides abundant food for largemouth and smallmouth bass, crappies, trout, sunnies and carp—big carp. The average carp is about five pounds, and I have taken them up to 10 pounds. When they are spawning from mid-April through June, the carp will take any visible streamer or large nymph. However, the most effective fly is the glow bug on a size 10 or 12 hook. After spawning the carp continue to take streamers, nymphs or glow bugs through mid-August.

The offering is best served on a 2X or 3X tippet because you may run into a 10-pound fish. Make sure you have plenty of backing, too. The best way to stalk a pod of carp is to wade upstream quietly until you can see the pod. Carp are wary creatures and will scatter to the deeper channels at the slightest provocation. But if you wait nearby for about 10 minutes the pod will always return.

The most effective presentation is a direct cast to the fish as opposed to an upstream presentation for trout. Sometimes a splitshot may be necessary to keep the bug from drifting in the slight current. When the glow bug is in place, the best retrieve is a slow twitch. Invariably, a hungry carp will slowly cruise over and make your fly disappear. Then lift your rod tip.

Warning! Hold on to your hat! Unless you have caught a truly heavy fish on a fly rod before, you may tremble as your reel screams when the 10-pound carp races away like a freight train. After you land the fish 15 or 20 minutes later, you can repeat the process until your arms are exhausted.—*Alex Russell, Philadelphia, PA.*

Comments on "The Single Mother"

I read the September 1990 "On the Water" column by Dave Wolf. Single mothers are not the only parents who need help getting their kids started in fishing. Even in two-parent households, there is no guarantee that Dad knows anything about fishing. Many parents would like to help their children take up such a wholesome pursuit, but they simply don't know how.

Recognizing this need, The Tyler Arboretum in Delaware County, together with the Delco-Manning Chapter of Trout Unlimited, co-sponsored a parent/child fishing workshop last spring. The subject was basic panfishing with spinning tackle and bait. The program was held on "Fish-for-Free" weekend, so that the parents could fish with their children without buying a license. Mike Oreski, our local Fish Commission volunteer Education & Information officer, was helpful in obtaining literature for us to hand out to participants. Local tackle shops as well as some mail-order tackle dealers were generous with donations of terminal tackle.

We held an introductory classroom session and question-and-answer period in the morning. After lunch, Trout Unlimited members volunteered their time to coach the novice anglers.

This program was very successful. Everyone involved had a thoroughly enjoyable time, and we received nothing but positive feedback from the participants. Many parents indicated that they would buy a fishing license so that they could take their children fishing again.

I think it would be wonderful if Trout Unlimited chapters or other sportsmen's organizations and/or nature centers throughout Pennsylvania sponsored similar programs. Anyone who would like more information on how our program was set up can call me or write.—*Mary S. Kuss, Adult Program Coordinator, The Tyler Arboretum, P.O. Box 216, Lima, PA 19037. Phone: (215) 566-9133.*

Fish Culture Station Foremen, Managers Examination

The fish propagation and culture programs developed by the Fish Commission during its first 125 years are considered among the best in the nation. Such success has been possible only through the skills, knowledge and technical abilities of the key "culturists" who manage and support our fish culture stations.

On May 3, 1991, the Civil Service Commission in concert with the Fish Commission announced the examination program for Fish Culture Station Foreman and Fish Culture Station Manager. Individuals in these jobs are responsible for the operational management of the Fish Commission's hatcheries. They supervise fish culturists and other hatchery support personnel engaged in the propagation, rearing and distribution of fish.

To qualify and be granted a test score for one of these titles, applicants must be Pennsylvania residents and meet the minimum requirements. Fish Culture Station Foreman requires one year of experience as a Fish Culturist or two years of technical experience in the propagation and culture of foodfish or gamefish. Fish Culture Station Managers require one year of experience as a Fish Culture Station Foreman or Fish Hatchery Supervisor or three years of experience in the propagation or culture of foodfish or gamefish, one year of which is in a supervisory capacity. Equivalent combinations of experience and training are acceptable for both job titles.

Current annual salaries for these titles range from $20,968 to $32,423 for the Fish Culture Station Foreman and $27,728 to $42,855 for the Fish Culture Station Manager.

If you have had fish culture experience in a state or federal fish hatchery, commercially operated fish farm, or even in a privately operated fish rearing station, you may qualify for these titles. Certain post high school education that included fish culture course work may also be substituted for part of the required experience. Minorities and women are encouraged to apply. The Fish Commission is an Equal Opportunity Employer.

To be considered and scheduled for the examination, a Civil Service Application must be submitted or be postmarked by June 14, 1991, after which the announcement will be suspended.

Application forms and more information, including detailed job announcement, may be obtained from State Civil Service Commission Offices in Harrisburg, (717) 783-3058; Philadelphia, (215) 560-2253; and Pittsburgh, (412) 565-7666; Pennsylvania Job Centers; and the Personnel Office of the Fish Commission, (717) 657-4528.

ANGLERS CURRENTS

Oil Creek TU Chapter Recognized

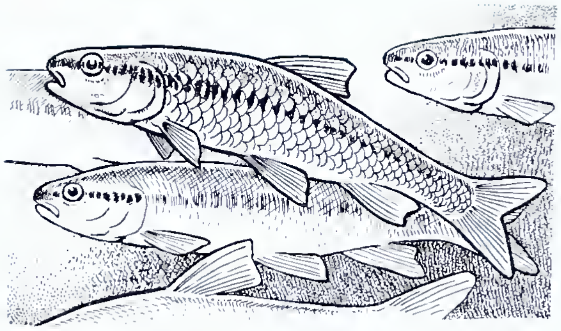
Larry Myers accepted Trout Unlimited's 1990 Silver Trout Northeastern Region Award, which was given last fall to Pennsylvania's Oil Creek Chapter at TU's national convention in Sun River, Oregon. Myers is president of the Oil Creek Chapter. The Franklin-based group was recognized for its outstanding coldwater resource conservation.

The Pennsylvania Council of Trout Unlimited also recognized the Oil Creek Chapter at its state conference, held last fall in Monroeville. The Oil Creek Chapter was named Chapter of the Year, as the outstanding overall Pennyslvania chapter. It also received the award for the largest increase in the number of members.

The Oil Creek TU Chapter is involved in stream improvement, special regulation fishing areas, trout stocking, pollution abatement, environmental watchdog efforts and conservation education. Trout Unlimited has 500 chapters nationwide with more than 50 chapters in Pennsylvania.

Angler's Notebook

by Chris Dolnack



Minnows don't fare well in hot weather. To keep them lively, put a freezer pack in the water to keep it cool.

For years, small glass or plastic rattles have been the worm-fishing secret of touring professional bass anglers. The small worm rattles create a clicking or clacking noise that imitates forage such as crayfish. Simply insert the rattle into the head of the worm and hang on!

As the water warms, walleye seek submerged humps topping off at around 15 to 25 feet below the surface. Depthfinders are valuable for locating this type of structure. Live bait and vertical lures such as the Heddon Sonar and Silver Lucky are ideal for taking walleye off this structure.

June is a great month for float-fishing one of Pennsylvania's rivers. The weather is usually stable, and bass, walleye and muskellunge remain accessible.

Gamefish hold off wing dams and gravel bars in rivers. The structure provides a resting place close to the current, which brings a steady flow of food. To work these fish magnets properly, anchor upstream and cast a jig or plug to the upper edge. When the water level is high, concentrate on the downstream side of the current break. In low water, work the hole at the end of the structure.

A good rule of thumb to determine where to find river fish is, "Water rising or stable brings fish to the table." When the water level begins to fall, fish move to deeper water to avoid getting trapped in off-flow pools. Low water levels concentrate the fish, but catching them becomes tougher.

Surface bugs and poppers are especially productive for bass and panfish when fished in and around weeds. When fish are reluctant to come to the surface, or when fly fishing open water, try casting streamers. Favorite patterns include the Muddler Minnow, Micky Finn, Wooly Bugger and Eelworm.

Finding rocky structure in or near deep water is especially important when fishing for smallmouth because their primary forage—crayfish—need rocks for protection. Rockpiles in 10-20 feet of water hold good concentrations of smallmouths throughout the summer.

Bass have highly developed olfactory senses. Use this fact to your advantage by applying a fish attractant to your jigs and plastic worms. The scent reinforces the visual stimulus and triggers the fish's feeding mechanism.

When fishing plastic worms use the lightest sinker necessary. A 3/16-ounce slip sinker is a good all-around choice, but a 1/2- or 5/8-ounce weight is sometimes needed to fish heavy cover. Be sure to put some flat toothpicks in your worm box to "peg" the sinker when flipping plastic worms.

The distinguishing feature that determines how deep a crankbait dives is the bill. Short-billed lures are shallow-runners. Longer-lipped baits are deep-divers.

illustration- George Lavanish

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On the Water

with Dave Wolf

Making it a game

Competitive angling and the gentle sport are worlds apart, and those who endorse one or the other form of the angle are divided. Many find angling an escape from the maddening crowds, from the competitive nature of life in general. They fish to find solitude, to restore body and perhaps even soul. They fish alone, or with a good friend who enjoys the same type of fishing they do. If a fish comes to the boat, so much the better. But if it doesn't, they find reward in the momentary escape.

Friendly side bets on the first, largest and most fish to be taken are probably as old as the sport itself. But some have brought fishing from the solitude of a secluded lake to a stadium atmosphere. Tackle and boat manufacturers jumped on the bandwagon as tournament fishing, especially for bass, began gathering national attention, and the even more cherished national television coverage allowed brand names to be plastered on every available space on clothing, boats, rods and reels.

Pennsylvania was ill prepared for the bass fishing circuit's march northward. Until 10 years ago or so, the best lakes for bass were found in the South, where warm weather allowed for a longer growing season of largemouth and smallmouth bass. No one could have predicted the phenomenal growth of tournament fishing, even as affiliated chapters of national organizations sprang up throughout the country.

Commonwealth anglers had become accustomed to the occasional"kid's tournament" and tournaments sponsored by local civic organizations, but they were not ready for the invasion of metal-flaked boats, equipped with live wells, depth and fish finders—items that cost more than the family car. They were not prepared for tournaments nearly every weekend on their favorite lakes, and the high usage by tournament anglers of launching areas and parking spaces, many of which were built and maintained by license sales.

It seemed inevitable that the two factors would collide—and they have. Many weekend anglers want the tournament angler banned from "their" lakes, claiming that they, through license dollars, have paid for the resource and the parking and launching areas. The tournament fishermen are quick to respond that they, too, are licensed fishermen and also buy licenses and register boats.

Some anglers believe that tournaments place too much pressure on lakes on a given weekend, and that tournaments are responsible for declining populations of fish. Tournament anglers claim that for the most part catch and release is practiced, and actually fewer fish are taken than what weekend anglers creel. I must interject to be fair and accurate that not all tournaments are catch and release.

Conservative anglers think that there is no room for competitive angling, basing their opinion on principle alone. They believe that although the bass are released after a tournament, they are all released at the same site. It is the conservative angler's concern that these bass may never return to the section of lake from which they were taken, or even worse, that they might perish.

But the fishing contests have answers to these concerns—simply that if they are practicing catch and release, then they have a right to kill the legal daily limit, and if a small percentage of bass do not survive, they are still well within their legal limits. Competitive anglers claim tournament fishing is good for the sport and it has done a lot to attract new anglers.

Many anglers would like to see tighter restrictions on bass tournaments: How many could be held at a certain lake in a given year, how much parking space may be used by contestants and the amount of time allotted for use of access areas. They think the tournaments have gotten completely out of hand, often creating access problems for the casual users of Commonwealth waters.

Some tournament anglers would like fewer restrictions, particularly concerning the culling of fish, meaning that after a limit has been taken, they may continue to fish and replace the smaller fish with larger ones they might catch. Currently culling is illegal in Pennsylvania. There are a few competitive anglers who would like tournaments to be held during the spawning time of both largemouth and smallmouth bass, something they believe would mean landing larger fish. Currently the season is closed during the spawning period.

Competitive angling versus the contemplative side of the sport—the collision of two worlds. The answers are not clear, and damage to the resource, if any, by tournaments is not yet chiseled in stone by the scientific community. One must hope that both can exist and that Pennsylvania anglers can have their cake and eat it, too. But one thing is certain—there must be a bargaining table where cool heads prevail with a meeting and understanding of the minds on both sides of the issue. At that table personal preferences must be set aside and the best interests of the resource addressed and resolved.

Today the issue is akin to the dog chasing its tail: there is much movement on both sides of the issue, but little resolve to date. Varying opinions will always remain, and that is as it should be, for total agreement is an idealistic goal. A more realistic answer would come in the form of something that all parties and the resource could live with.

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Straight Talk

A Big Lift for the Susquehanna River

On Thursday, May 9, 1991, a dedication ceremony was held at the Conowingo Hydroelectric Station for the recently constructed east fish passage facility. The lift was designed following U. S. Fish and Wildlife Service guidelines in cooperation with Pennsylvania, Maryland, New York and other federal agencies. The new lift was completed by Philadelphia Electric Company on April 1, 1991, at a cost of $12 million. It is designed to lift 750,000 American shad, and will be operated annually from April through mid-June.

Although it will be necessary to transport captured American shad upriver by truck for the next few years, the stage is now set to let American shad migrate again into the Pennsylvania waters of the Susquehanna, thereby triggering installation of the next lift at Holtwood Dam.

Speakers at the dedication ceremony included Nicholas DeBenedictis, Senior Vice President, Philadelphia Electric Company; Joseph F. Paquette, Jr., Chairman and CEO, Philadelphia Electric Company; Most Reverend William H. Keeler, Archbishop of Baltimore; Honorable William Donald Schaefer, Governor of Maryland; Honorable W. Tayloe Murphy, Jr., Chairman, Chesapeake Bay Commission; Honorable Frank Bracken, Deputy Secretary, U. S. Department of Interior; and me.

The following are my comments to the large group attending the dedication ceremony, which I want to share with *Angler* readers:

One hundred and twenty-five years ago, on March 6, Governor Andrew Curtin signed Act 336, which established the post of Pennsylvania Fish Commissioner. The first Commissioner was charged with the responsibility for management of Pennsylvania's fishery resources, with the specific mandate of managing and protecting the migratory fishes in the Susquehanna River. In 1931, Act 121, the first motorboat law was enacted and the Fish Commission was given the additional responsibility of regulating and managing motorboating activities on Pennsylvania waterways.

Today, management of Pennsylvania's valuable fisheries and related fishing and boating activities is in the hands of the 10 commissioners who comprise the Pennsylvania Fish Commission.

During this long heritage—125 years for fisheries and 60 years for boating—Pennsylvania has focused continually on the Susquehanna River migratory fish, which at one time migrated upriver more than 200 miles from Conowingo. Navigation dams built in the lower river during the 1830s began restricting upriver American shad migrations, and their ascent to upriver Pennsylvania waters was completely blocked by construction of Holtwood Dam in 1910 and Conowingo Dam in 1928.

Nearly 40 years ago, in 1952, the Pennsylvania Fish Commission and the U. S. Fish and Wildlife Service conducted experimental transplanting of shad from the Chesapeake Bay to various points above the dams. This effort was the beginning of a coordinated restoration effort among Maryland, Pennsylvania, New York, the U. S. Fish and Wildlife Service, Susquehanna River Basin Commission, dam owners in Maryland and Pennsylvania, and interested sportsmen.

A major breakthrough occurred in 1960 when Pennsylvania authorized Milo C. Bell and Harlan B. Holmes, West Coast fishway consultants, to study the feasibility of installing fish passage facilities at the four major dams on the lower Susquehanna River. The study concluded that the construction and operation of fish passage facilities for American shad at the four lower Susquehanna River dams was practical, and that restoration should proceed on an integrated step-by-step fish rehabilitation program.

During the past 30 years, involved dam owners and federal and state agencies, working together as the Susquehanna River Anadromous Fish Restoration Committee, have made great progress in restoring sufficient numbers of American shad and finding answers to the many technical and biological questions surrounding this effort.

This restoration effort was greatly enhanced in 1976 by creation of a shad rearing facility on the Juniata River at the village of Van Dyke, Pennsylvania. Operated by the Pennsylvania Fish Commission with financial support from the involved Pennsylvania utilities, this facility has successfully introduced over 100 million young shad into the river system.

The facility we are dedicating today is a fitting testimony to the combined efforts of these organizations during the past 40 years, and the continued presence and interest of the sportsmen throughout Maryland, Pennsylvania and New York. Pennsylvanians look forward to repeating this ceremony at Holtwood Dam, Safe Harbor Dam and York Haven Dam as passage facilities are installed in the remaining structures on the lower Susquehanna River.

Many people have worked many, many years to make this day possible. Philadelphia Electric Company has taken the first giant step in this great effort, and it is now time to move ahead with the next steps at Holtwood, Safe Harbor and York Haven. After 125 years as an agency, the Pennsylvania Fish Commission pledges its continued support for this endeavor.

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The covers

This issue's wraparound cover, photographed by Delaware Countian Bob Garman, says "boating angler."

Retired Commission "fish wardens" and waterways conservation officers reminisce in this month's 125th Commission anniversary article. To check out "the good old days" as they remember them, see page 4.

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I WAS A PENNSYLVANIA FISH

50 *Years of Memories*

A terrible situation was bemoaned in Pennsylvania's State Commissioners of Fisheries Report for 1883 and 1884. While the Commissioners were restoring "useful tribes of food fishes" to the waters of the Commonwealth, there were many whose lawless acts were undoing what the Commissioners were working so hard to accomplish.

At that time, the enforcement of the fishery laws was the province of sheriffs and constables. The problem was that many of these officers had "willfully and ... shamefully shirked their obligations. The streams have, therefore, been practically left to the mercy of those who set the laws at defiance, and the result is before the people in the constantly diminished quantities of food fishes."

"Is there no remedy for this?" the report went on to exclaim. "Must it be confessed that it is impossible to have the fishery laws of the state respected? Shall this wanton work of fish destruction, which would not be tolerated in a heathen country, and which is a disgrace to our civilization, be further permitted...?

"... It becomes absolutely imperative, if the work already done by the Fishery Commissioners is not to prove wholly abortive, that means must be provided for the payment of fish-wardens or water-bailiffs, whose duties shall be rigidly defined by law, and who will, therefore, not be deterred from arresting offenders and testifying against them....There seems to be no other remedy than the employment of paid wardens, with sworn obligations for the faithful performance of their prescribed duties."

Since that time, the Pennsylvania Fish Commission has had a long history of "faithful performance" by its "fish wardens." Today the title is Waterways Conservation Officer (WCO), reflecting more properly the scope of the duties, enforcing the fishery conservation and boating laws on the waterways of the state.

This past winter, the tenth class of WCO trainees attended instruction at the H.R. Stackhouse School of Fishery Conservation and Watercraft Safety, located at Fisherman's Paradise near Bellefonte. The officer class also completed municipal police officer training at the Pennsylvania State Police Academy, and extensive field training under the tutelage of experienced Fish Commission officers. It takes nine months of intensive training to ready today's "fish warden" men and women for their careers in conservation law enforcement.

When the new WCOs are sent out into their districts, they are issued thousands of dollars worth of equipment from hats, boots and badge to binoculars, boats, typewriters, sidearm, vehicle, radio and more to aid them in performing all the facets of their jobs. Even computers are part of the equipment.

But it wasn't always like this. Anniversaries are a time for nostalgia, for looking back to see where we've been, how far we've come, what's changed and what hasn't. The Fish Commission's 125th anniversary celebration is no different. Some of the "old-time fish wardens" who are enjoying their retirement in Pennsylvania were gracious enough to share their reminiscences with *Angler* readers.

Ken Aley

From 1938 to 1974, if you said "Potter County fish warden," you meant Ken Aley. Ken still resides there, in his north country home town. Back in '38, Ken says, he was working for the highway department. When the opportunity came to get into the Fish Commission, he took it, because, "I'm lazy. I'd rather be a fish warden than shovel asphalt." Ken took a "not too stringent" exam and had to have the endorsement of his county chairman to get the job. He had an interview with the Board of Fisheries Commissioners and six weeks of "training" at the hatchery at Bellefonte, mostly manual labor.

The next stop for the fledgling officer was Harrisburg. There he was told he'd be paid $100 a month, with a $75 a month expense account, and was given the paperwork he needed for the job. He'd have to use his own car, compensated at the rate of five cents a mile, and would have to furnish the rest of his equipment himself.

Ken went back to Potter County, where he's been since, except for four years of World War II. The remainder of his training was "on his own," with help from neighboring Game Commission and Fish Commission officers. Though Potter's a big county, at one time Ken was responsible for portions of McKean and Cameron counties as well.

In 1949, Ken posed proudly for the cover of *Pennsylvania Angler* in the Fish Commission's first new uniform. Until then, officers were issued PA State Police hand-me-downs. But Ken says he worked in his hunting clothes most of the time. They were better for the rough-and-tumble outdoors.

In the old days, all he'd have to show to identify himself was his badge, or tell someone who he was. Because he was an institution in the county, most fishermen recognized him. Potter County was a tough one for prosecutions, Ken remembers, nearly all concerning trout. Typical violations sound a lot like today's—short trout, too many trout, no license. In his long career, Ken found the fish law violator to be ingenious. People hide their illegal fish almost anywhere, he says, trying to get away with something.

WARDEN:

1866-
1991

125 years

by Linda L. Steiner

One woman, whose companion was passing his short trout to her, put them down the front of her blouse. She retrieved them when she realized Ken couldn't be bluffed and would take her to the sheriff's to be searched.

Some violators try to play it innocent, like the old man who hid an undersize fish in a handkerchief in his pocket. When Ken asked him to take out his handkerchief and open it up, the man looked surprised to find the trout.

"Now how do you suppose that got in there?" he asked Ken.

Certainly Ken's most memorable case was when he was on the right side of the law, and the "Untouchable," Elliot Ness, was on the wrong. During the 1950s, Ness had moved to Coudersport. Ken had caught Ness's wife fishing with a resident license, when she should have purchased a non-resident permit. Ness balked, saying he'd fight it, but Ken stood his ground. In the end it was Ness who backed down and paid the fine. Afterward when Ken would see Ness in town, Ness would kid him about how slick he'd been catching his wife.

When Ken began his fish warden career over 50 years ago, there was not much public support for conservation law enforcement. But over time, he saw that people were recognizing, "There was an end to it, and you can't take it all without giving anything back." He's amazed at how many anglers now "fish for fun," whereas years ago the attitude was to keep them all. In retrospect, Ken says he met some "real good people," especially the sportsmen. He envies the new WCOs and their training.

Clarence Shearer

In 1941, Clarence Shearer joined the Commission as a fish warden, retiring in Venango County in 1976. To take the job, Clarence quit a job at a steel mill, where he was making nearly $100 a week. Fish warden pay started at $100 a month. But those were hard times, Clarence remembers, and he knew that fish and game wardens always had a check coming in. Besides, he loved the outdoors.

Clarence took an exam in Harrisburg, and then he and other successful applicants reported for hatchery work at Bellefonte. They cleaned ponds and seined fish, "just to see if we'd work," he suggests. Next, they received their commissions, a badge and a firearm, and were told to go to their districts.

Clarence was sent first to Armstrong County. In his new job he relied on the experience he'd had as a deputy game protector. Clarence recalls the State Police uniform they used then, heavy leather leggings, black whipcord breeches, wool shirts and dark-gray stetson. Fish wardening was a full-time occupation, seven days a week in the busy spring and summer season. Holidays were always work days, which left little time for family or socializing.

By 1951, Clarence became one of the Fish Commission's first regional supervisors. He was sent to the northeast, Sweet Valley in Luzerne County. After three years, he transferred to the northcentral, at Lock Haven. By 1957, he was again a field officer, this time in Venango County.

Although law enforcement can be dangerous work, Clarence says he never had any serious confrontations with violators, "because I'm fairly good-sized." In the old days he rarely carried a firearm, but on one occasion he was glad he did. Clarence had stopped along the Allegheny River to check two fishermen who had an out-of-state car but resident licenses.

As they all went up the bank, he heard one ask the other, "Do you have your 'shiv'?" Clarence knew this meant knife. Luckily he had worn his sidearm that day, so he "sort of brushed my coat aside, so they could see. Their eyes got big, and it was obvious from then on they didn't want any trouble."

Wilbur Williams

Wilbur Williams still lives in McKean County, where he was the fish warden for nearly 30 years. Wilbur began with the Commission in 1950, having been a deputy game protector for 11 years. Before he went on he was making $5,000 a year in a silk mill. Starting salary as a fish warden was $2,100, but this was a way to get into the conservation law enforcement he'd always wanted. After six weeks at the Bellefonte hatchery, Wilbur received his papers and reports in Harrisburg, a gun, "a used badge," and the inevitable state police uniform. He was told to report to Mt. Jewett the next morning. In addition to McKean, Wilbur had responsibilities for a time in Elk and Cameron counties.

Public sentiment "wasn't too much for conservation law enforcement at first," Wilbur remembers. Even the judges were difficult to convince. There was one before whom he never got a guilty verdict. Like the time Wilbur caught a violator with two dozen trout the first day of the season. The judge found the defendant not guilty on another man's affidavit, who Wilbur says wasn't even at the scene. Another time, he had two fellows for 11 short trout, interference with an officer and resisting arrest. In the fracas, one man broke his leg. The judge threw out the case because, Wilbur says, "What with

the broken leg and all, the judge figured he'd had enough problems."

Wilbur says to do the job effectively, a warden can't be afraid to check even the roughest looking suspect. He didn't dare let it show when he was shaking in his shoes, but had to keep calm and in control. That included the time someone tried to run him down with a car.

McKean County was always a big workload. When Wilbur first got there, fish law violations were rampant and public attitude was bad. "They didn't even try to hide it," he recalls. The creation of Kinzua Dam added to his busy hours. Pollution cases kept him hopping, especially oil and brine water. Since he started, he too saw a change in public attitude, and in the attitude of the oil industry in reporting spills and taking action to correct the problems.

Wilbur is especially proud of helping to institute "wired areas" on trout streams. The first was on the West Branch of Kinzua Creek in 1959. Wired areas were an attempt to remedy the problem of "truck followers" catching most of the fish from in-season stockings. Wilbur's idea was to stock within the wired-off zones and let the trout work out gradually, so that they would be available for a longer period. He says most people liked it, but he had quite a few prosecutions involving anglers who just couldn't resist sneaking in.

Willard "Bucky" Persun

Willard "Bucky" Persun, Bradford County's fish warden from 1952 to 1981, says that in the "old days," all the wardens worked like crazy spring and summer. Then come Labor Day they "pretty much hung everything up." By contrast, today's WCOs have busy year-round schedules.

Bucky wanted to be a warden because he "wanted to help the sportsmen, to make better fishing, and to do law enforcement for them."

He insists that to be effective in the position, you've got to respect fishermen. "You have to respect even the biggest outlaw in the area, when he's right. Then lower the boom when he knows he's wrong." Bucky says he got every habitual violator he wanted except one, and "he died."

Bucky wanted to go on with the Game Commission at first, but went with the Fish Commission when there was an opening. He confides he was "stolen from the PGC." His first assignment was Bradford County, at $2,100 a year salary. The equipment he was given "would have fit in your hand." Training was what he'd had as a Game Commission deputy, and what he picked up in the field from other officers. His first night in Bradford County he nabbed three violators on a roadblock.

Bucky often worked law enforcement in his civilian clothes, and would sit down right next to a suspected violator. Later the Commission gave him a shirt with a patch. "I had to hold my hands over it to hide it to make cases," he says. Prosecutions could be chancy. Bucky recalls getting hold of the "wrong guy." He and a deputy saw a man taking over the limit of fish, but when it went before the judge, he was found not guilty. The judge said to Bucky, "I've hunted and fished with this man and you fellows must be mistaken in what you saw."

On the other hand, there was the fisherman who caught eight trout, stashed them in his cabin and went out and caught eight more. The violator protested and wanted a hearing. When it came to court, the judge didn't want to hear any of the man's excuses.

"If Persun says you're guilty, then you're guilty," the judge thundered, and that was that.

Bucky himself was taken in by the "bottomless bucket" trick. He watched an angler placing undersize fish in a bucket that was sitting in the shallows of the lake. Bucky got to the bucket first to seize the evidence. But when he lifted it, there was no bottom, and all his evidence swam away.

Bucky got an education in handling people very early in his career. He remembers picking up a fellow, who was a businessman and community leader, for a fish law violation. The man's two boys were fishing upstream, so he and Bucky waited on a rock for them to return, before going to the J.P. Bucky noticed the man was very worried, very nervous. Finally he turned to Bucky and said, "Young man, if I had a pistol, do you know what I'd do?" "I suppose you'd want to use it on me," Bucky answered.

"No, I'd kill myself," the man responded.

Bucky found himself calming the distraught angler, convincing him that what he'd done didn't warrant anything like that. "I told him he wasn't the first person ever to be fined, and he wouldn't be the last. It's just two little short trout involved here." Bucky arranged to file the paperwork with the J.P. and have the man stop in and settle at his convenience. He recognized the man's integrity and that he couldn't bear to be humiliated in front of his sons.

Steve Shabbick

When Steve Shabbick came on the Fish Commission as a warden in 1955, he was in the first group to take a comprehensive, competitive written examination, with 600 vying for the job. Steve had been a Game Commission deputy for seven years, and received additional training with Fish Commission field officers and supervisors. "When they felt you were ready, you'd get your district," Steve recalls. He retired in 1988 from his first assignment, Wyoming County.

Steve remembers starting at $3,900 a year, with $80 a month in expenses. In the beginning, when he needed a boat he'd borrow it from one of the Commission hatcheries. He wore his uniform only when participating in road blocks. For most occasions, he'd just show his badge.

Though that changed during his career, Steve says that the types of cases he had were consistent, such as no license, over the limit, nonresidents on resident licenses and such. Steve believes that more people visited his area years ago, crediting new impoundments and better fishing nearer the urban areas from which the angling and boating crowd used to come.

As other wardens, Steve has seen a change of attitude in the

PENNSYLVANIA FISH COMMISSION
1958
1955 and 1957 sessions Legislature
FISH LAWS

population, especially regarding pollution. When he first went on, too much was tolerated. Steve was in on the Bowman's Creek pollution prosecution in 1962, when a tannery spill killed nearly 300 legal trout, including many lunkers. Fines and restitution were assessed at $10,000.

In 1962, Steve was the subject of an article in *Sports Illustrated* by writer Barbara Heilman. It was titled "Long Hours, Low Pay, and Guns Fired in Anger," concerning the nation's conservation wardens. The author recounted some of Steve's experiences on patrols up and down the Susquehanna. Being featured in *Sports Illustrated* is a distinction few except the million-dollar athletes can claim.

Fritz Ohlsen

Frederick "Fritz" Ohlsen was in the first class at the Fish Commission's H.R. Stackhouse training school in 1964. Fritz was hired in 1957 as a fish warden, and served in Carbon County until 1985. Fritz remembers it took several weeks for him to get his Fish Commission badge, so he used his Deputy Game Protector's badge in the meantime. Fritz had been selling insurance, but he wanted to do "law and order work." He took a statewide exam and scored high enough to begin as a fish warden at a "whopping" $3,925 a year.

New wardens were still started in the hatchery. Then they went to the field in various parts of the state under the direction of supervisors until they were ready and a district was open. When his opening came it was for Carbon County, although at one time the district included slices of Schuylkill and southern Luzerne counties.

Carbon County's fish and boat law workload changed greatly during Fritz's tenure. When he started, the district had only one state park. By the time he retired, he was patrolling three state parks and one county park. At first there were no warmwater areas that weren't private. Then came Beltzville and other lakes, and lots of boating and warmwater fishing. His cases grew from 30 a year to 200, as more people came into his area for recreation.

On the down side, Fritz saw more posting against access, and he says he encountered less respect from the public than in the "old days." But he, too, is impressed at how many people are now releasing the fish they catch.

"Popular sentiment, which for a time was strongly arrayed against the Commissioners and their work, appears to have settled down to a full conviction of its importance...."

Though those words could have been written in 1991, they, too, are from the Commissioners of Fisheries Report of 1883-84. Though there will probably always be those who will break whatever laws are made, "popular sentiment" continues to grow on the side of resource conservation. Former fish wardens Aley, Shearer, Williams, Persun, Shabbick and Ohlsen have seen this happen in the span of their careers. They can be proud, along with their fellow "fish wardens" and today's waterways conservation officers, to have had a part in effecting that change.

The author thanks all the "fish wardens" who contributed their memories and mementos so freely to the author's researching and writing this article.

When Bluegills GO DEEP

by Jim Gronaw

Most anglers regard the sport of bluegill fishing as a shallow-water endeavor with short casts, garden worms and neighborhood children the prime ingredients for a successful outing. Indeed, this combination is a pleasant experience for all of us. But there are times when bluegills, especially the larger adults, are just not in shallow water or even near deep weed edges. Most of us have been conditioned to believe that bluegills are primarily fish of shallow water. This may be true of some farm pond fish, where there just isn't any deep water to speak of. But in larger lakes and reservoirs, 'gills often seek much deeper haunts.

During early summer, bluegills spawn in shallow water. A variety of methods works, and everybody tears them up. This season of easy pickins' makes many people figure that these robust panfish are gullible and easy to catch. Ask these same anglers to catch some big bluegills during April, July, August or October and the results may be quite different. Throughout much of the year, tanker 'gills are fish of the depths. And by tanker standards, I mean fish that run eight to 10 inches long and weigh from a half-pound to one pound each. Any body of water that harbors panfish of this size in fishable numbers is a quality bluegill lake.

The whole idea for success requires a slow, natural presentation for a fish that many anglers regard as "kid's stuff." By getting down to the nitty-gritty of deep-water bluegills, you'll be able to take big fish all year, not just during the spawn.

Where to look

Deep structure for bluegills is often the same location where you might expect to find bass, crappies or other gamefish. Pay particular attention to areas of submerged wood such as trees, brush or stump fields. Big 'gills are like crappies, and when faced with a variety of structure types, they usually show a preference for wood or brush. If such cover is not available, then deeper rock or manmade rip-rap areas can draw them. Submerged fence rows, creek channels, weedbeds or roadbeds are also worth investigation. Thought of as mostly bass territory, these areas also attract and hold adult bluegills, especially during early spring and after the hectic spawning period.

The term "deep" is relative, and it varies from one lake to the next, depending on water clarity, depth of weed growth or location of structure. In most cases, desirable structure in the eight- to 20-foot level are where you want to look.

Some waterways have very clear water coupled with heavy boat traffic. On these waterways even bedding bluegills spawn as deep as 12 to 18 feet on suitable gravel sites. On York County's Lake Marburg, for instance, boat traffic peaks around late May or early June and thus drives spawning fish much deeper than the customary two- to five-foot levels. The combination of ultraclear water and boating disturbances often makes even spawning bluegills tough, deep-water adversaries. Even during the spawn, don't be afraid to look for deeper fish.

On larger lakes that have numerous bridges, you may want to check for suspended 'gills below the spans. Heavy rain often washes a variety of insects or earthworms into these areas, where fish may feed on wind-blown or washed-in morsels.

Of course, deep bluegills call for a depthfinder to determine their exact location. Without such a unit, this brand of fishing becomes haphazard. Use your electronics the same as you would for other gamefish, and using a marker buoy or wood structure eliminates the guesswork.

Rod types

Three methods stand out for getting down to bluegills—vertical jigging, long pole, and slip-bobber tactics. All these strategies can be effective, but each has its own time and place.

Vertical jigging is effective, but it has shortcomings in terms of covering water, and the presentation must be exact. In very clear water, this method may not be the best, because anchoring over structure in clear water often spooks fish. This tactic seems better for darker, more turbid lakes.

Although today's standard five-foot ultralight rods suffice, it is better to fish vertically with longer, lightweight rods of 6 1/2 to seven feet. The longer the rod, the better the hookset on fish that are deep, because more length increases the upward "sweep" when setting the hook. This is important for 'gills that are deeper than 10 feet.

Long ultralight rods are just now catching on. For deeper panfishing, they are perhaps the most versatile rods.

Vertical fishing can also be done with long fiberglass poles that measure 10 to 12 feet. These rods are ideal for drifting bait or jigs over 'gills that are within the eight- to 14-foot depth because you need only a rod-length of line to reach the fish. Playing a fish involves just lifting the bluegill up and away from the structure and easing it up to the boat. Many newer "crappie poles" have line guides and accommodate an ultralight reel, making them adaptable to depth changes. A 3/4-pound bluegill can bend one of these rods to a horseshoe, adding to the excitement.

Whichever rod style you wish to use, perhaps the best way to get to the fish is using a slip-bobber rig. These rigs have been much improved since their origins of years ago. The rig consists of a tiny rubber bead threaded onto the line, followed by a plastic bead, then a two-inch, in-line styrofoam float. Below the float is knotted a 1/64-ounce jig with a BB-sized splitshot above it to help drop the offering to the proper depth.

Once you've located fish on your depthfinder, you can adjust the rubber stop 10, 15 or 20 feet above the bait—wherever you saw fish on the screen. This option allows you to anchor close to 'gill-holding structure, without spooking them, while making easy lob casts to the fish. This is particularly useful in clear water where you don't want to get right on top of the fish.

When you've spotted good structure, it pays to pinpoint it with a marker buoy. Even after you've marked structure, circle around the buoy and determine exactly where the brush, dropoff or wood is in relation to the marker. Then anchor, drift or slow-troll the area with vertical or slip-bobber presentations.

The business end

Ultimately, it's what you offer deep 'gills that determines your success. There are many baits and lures that are great for gills, but when you go deep, think small and think live bait.

A great, versatile option is to use 1/64- or 1/32-ounce plain, unpainted jigs and tip the hooks either with waxworms, maggots or portions of earthworms. Stay away from larger nightcrawlers because you end up missing more strikes than making hooksets. Size 10 long-shanked Aberdeen-style hooks are also excellent for impaling bait, and their thin-wire construction allows you to straighten them out when snagged. Reshape them with pliers, touch them up with a hone, and you're back in business.

Another excellent lure choice is a variety of ice flies and teardrop jigs that are so effective for ice fishermen. These tiny offerings are designed with vertical presentations in mind, and though seldom used outside of hard-water season, they are ideal for deep-water bluegills. The brighter fluorescent-color ice flies should be tipped with bait as well and their added visual appeal could be the needed enticement for discriminating deep-water 'gills.

The whole idea for success here requires a slow and natural presentation for a fish that many anglers regard as "kid's stuff." By getting down to the nitty-gritty of deep 'gills, you'll be able to take big fish all year, not just during the spawn.

Keystone CRABBING

by William S. Ettinger

A fact little known to most is that blue crabs swim into fresh water, including our own Delaware River, moving upstream as far as the head of tide at Trenton, New Jersey. Believe it or not, you can catch crabs in the Keystone State.

The blue crab *(Callinectes sapidus)* is one of those unusual animals that can live in the ocean's salt water, in fresh water, and in the brackish mix we call an estuary. The two- to three-year life cycle is complex with several early planktonic stages that little resemble the later free-swimming and adult crabs.

Juvenile and adult crabs escape the cold of winter by burrowing in sediment at the bottom of Delaware Bay. When the water temperature begins to rise in the spring, the crabs crawl out of the sediment and swim and feed, slowly moving up the bay into the less salty water of the estuary. By June or July, some of them reach the fresh water of the Delaware River near Chester and may continue even farther. The majority of these "frontier" crabs are males because most of the females mate in the brackish upper estuary immediately following their last molt (shedding of the shell).

The females then rapidly migrate to the mouth of the bay where they brood millions of fertilized eggs per individual. In late July to early August, the eggs hatch into planktonic larvae called zoeae, which do not look at all like crabs. Because they are planktonic, the tiny zoeae are swept by tidal currents from the bay onto the Atlantic Ocean's inner continental shelf.

During four to six weeks of growth, they molt seven or eight times and then enter the next development stage, called megalopae. Megalopae look more crab-like than do zoeae. The planktonic megalopae drift back into Delaware Bay on tidal currents in September and early October. Within days they molt to the first of 20 swimming juvenile crab stages.

The juvenile crabs begin their swimming movement up the bay. By December, water temperatures are sufficiently cool to trigger sediment burrowing. The juveniles emerge the following April, resume swimming and feeding, and continue their slow movement up the bay until the following winter when they again burrow in the sediment. The following spring, the late juvenile-stage crabs emerge from the bay bottom and most molt to sexual maturity and mate to reproduce the next generation.

A commercial fishery for blue crabs in Delaware Bay has existed since the latter part of the 19th century. During the hundred years or so of crabbing, the total weight of blue crabs taken each year has varied considerably. These large fluctuations are thought to occur for two reasons. First, severe winters kill juvenile and adult crabs over-wintering in bay sediments.

Secondly, and perhaps more importantly, movement of the planktonic megalopae from the inner continental shelf into the bay via tidal currents appears to be largely wind-driven. If the prevailing wind pattern during the critical months of September and early October is in a bayward direction, larger numbers of megalopae enter the bay than might otherwise. In fact, University of Delaware researchers believe that the success of the commercial crab catch in Delaware Bay two years later may be predicted through analysis of these wind patterns.

Recreational crabbers in Delaware County have been taking crabs since the mid-1970s and possibly earlier. At that time, apparently not much crabbing occurred, presumably because there were not many crabs to be caught. However, things seem to have changed since the early to mid-1980s. In fact, sufficient crabbing is now taking place, and the Fish Commission instituted crabbing regulations for the first time in its history on January 1, 1987.

Water quality indicator

Why are we now seeing more blue crabs and crabbing in the freshwater Delaware River? Strong circumstantial evidence points to improved water quality in Pennsylvania waters, particularly in the vicinity of Philadelphia.

Pollution in the Delaware River has been observed for over 200 years. Water quality was worst during and shortly after World War II. In fact, pollution was so bad that river water damaged the paint of ships visiting the port of Philadelphia and airplane pilots flying overhead could smell the river. Large areas of the river contained little or no measurable dissolved oxygen through the summer, killing fish or blocking their spawning movements past Philadelphia.

Through interstate cooperation beginning shortly before the war years, great strides have been made in improving Delaware River water quality. Sewage treatment plants have been constructed and upgraded, and wasteload has been apportioned among industrial as well as municipal sources. The most obvious result is increased levels of dissolved oxygen measured even during midsummer "dog days."

The effect of improved water quality is expressed dramatically in Delaware River fin fisheries. The population of American shad has increased and the area of the river in which this species spawns is greatly enlarged. In addition, the number of fish species captured in surveys conducted in the vicinity of Philadelphia has more than doubled from 1959-82 (16 species) to 1985-86 (36 species).

Blue Crab Regulations

Crabbing requires a fishing license. The blue crab season is open year-round, and the daily limit is one bushel combined hard shell and soft shell crabs. The minimum size measured point to point is four inches for hard shell crabs and 3.5 inches for soft shell crabs.

Female blue crabs bearing eggs or from which the egg pouch or bunion has been removed may not be possessed. Crab pots are limited to no more than two pots per person when taking crabs. An unattended crab pot must be labeled with the name and address of the owner or user. Disturbing an unattended crab pot is unlawful, excect by the owner, user or members of the immediate family and officers or representatives of the Fish Commission. Blue crab regulations for the Delaware River and estuary include tributaries to their limits of tidal influence.

The improved water quality that has enhanced the Delaware Estuary fin fisheries has done the same for blue crabs. Blue crabs are known to be sensitive to low dissolved oxygen levels. In research conducted in the mid-1970s, crabs moved up the Delaware River to the mouth of the Schuylkill River in late spring. However, with the appearance of summertime dissolved oxygen sag, crabs left the area. They returned in early fall after dissolved oxygen levels rose.

How to crab

Blue crabs move upstream in the Delaware River to the head of tide at Trenton, so you should be able to catch them throughout this reach. However, there are two important points to remember. First, the farther upstream you go, the farther crabs have to swim and the fewer will be available to catch. This is particularly true during wet years when increased Delaware River flow drives salinity bayward downstream of the Pennsylvania state line. This means that you can have greater success catching crabs in Delaware County than in Philadelphia or lower Bucks counties.

Secondly, the Delaware River shoreline from Delaware County through lower Bucks County is largely industrial with easy access to the water limited only to a few locations. Of course, with a boat you can crab nearly anywhere.

According to Delaware County WCO Alan Robinson, good access points for shoreline crabbing are Governor Printz Park in Essington and the public boat access at the Commodore Barry Bridge in Chester. In Governor Printz Park, you can crab from 100 yards of open shoreline. The Commodore Barry Bridge access has less open shoreline, but it does have benches along the water's edge. You can launch a boat there, but be warned that you cannot legally crab from the floating docks.

Another good place to crab in Delaware County is in the Tinicum National Environmental Center. Here many lagoons were formed when material was excavated for construction of nearby I-95. Because the lagoons are connected to the Delaware River, crabs move in and out. You can crab from a 200-foot-long pier conveniently located just off Route 420.

Philadelphia County DWCO Norm Lewis says that crabs are taken from the shoreline at three locations: the Fish Commission's Frankford Arsenal Access; the Commission's Tacony Access, located off Princeton Avenue about eight-tenths of a mile north of the Tacony-Palmyra Bridge; and the city of Philadelphia's Linden Access, at the foot of Linden Avenue in the city's Torresdale section.

Don't forget the Schuylkill River, which is tidal to Fairmount Dam at the art museum. Public access is difficult, but some people do crab from both sides of the river near the dam.

Lower Bucks County WCO Wayne Imler says that not much crabbing occurs in his part of the Delaware River. However, biologists have caught crabs during fisheries surveys in Neshaminy Creek. If you want to try crabbing in this area, you can get to the water at two locations. There is public access at Neshaminy State Park, located at the Neshaminy Creek mouth, and another at the foot of Mill Street in Bristol.

Some people crab from anchored boats. If you do, be careful because Philadelphia is a major seaport and the volume of commercial traffic is large. A small boat can be swamped easily by a passing ship's wake.

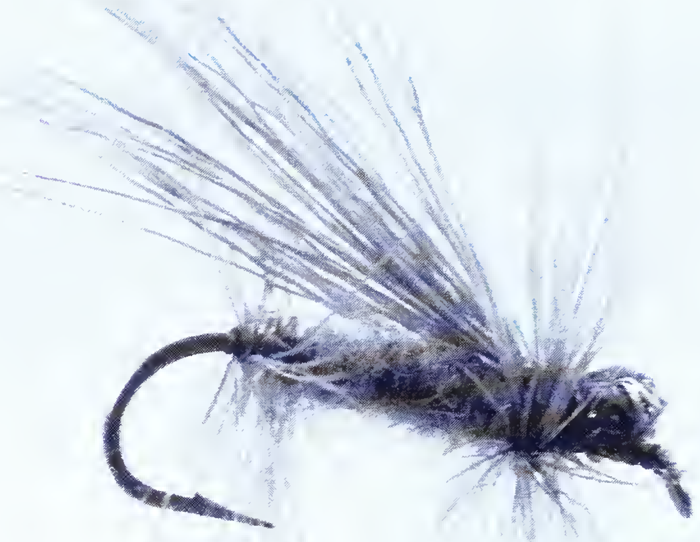
When can you catch crabs? Just about anytime between early June and mid-October. However, you improve your chances if you wait until later in the season because by then more crabs will have made the long journey up from Delaware Bay. Try to time your crabbing with the arrival of high tide. The upstream movement of the water carries crabs with it.

You can crab in two easy ways. You can "chicken neck" or you can use a crab trap. The former is nothing more than the time-honored tradition of tying inexpensive bait, like chicken necks, backs, or even fish heads, to string or fishing line. Blue crabs eat almost anything. Dangle the baited line in the water. When you see a crab feeding on the bait or feel it tug the line, slowly pull it up and quickly sweep the crab out of the water with a small net.

The second and perhaps more effective method is to use a small trap lowered to the bottom with light rope. The crabs move into the trap around a series of baffles to get to the bait. Again, chicken or fish parts work well. The baffles prevent the crabs from escaping. You can buy an inexpensive trap at sporting goods stores or some discount stores, or you can build one easily using chicken wire or scrap wood.

So don't drive to Delaware, Maryland or New Jersey to crab. Try it in the Keystone State!

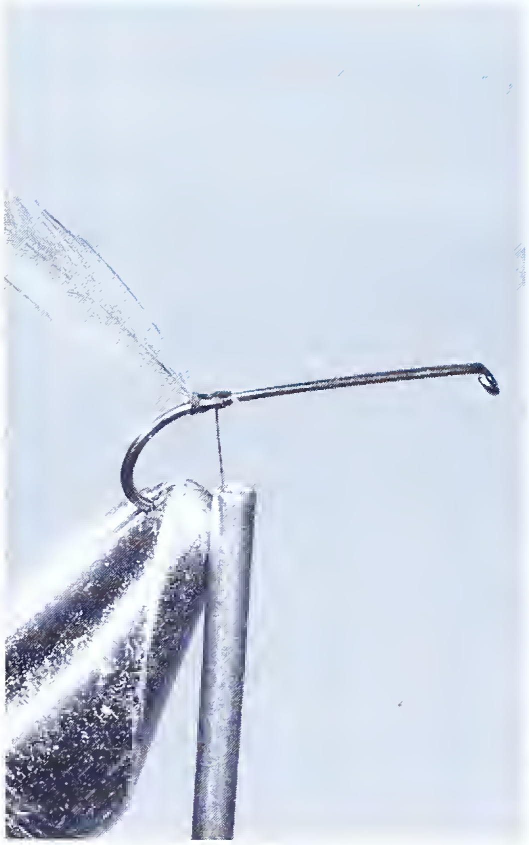
The Gray Stone



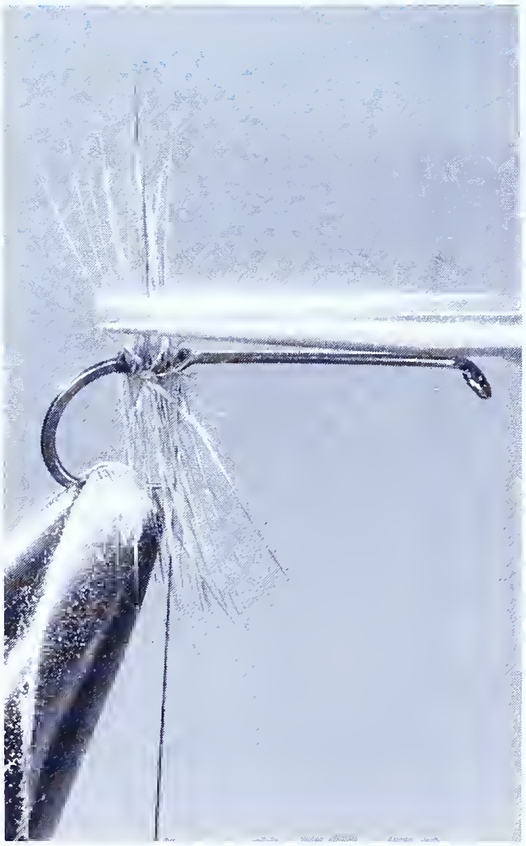
by Chauncy K. Lively
photos by the author

Dry flies representing mayflies generally occupy much space in the typical fly box. I suppose this is to be expected because mayflies are perhaps the most frequent—and certainly the most recognizable—of all the aquatic insects anglers encounter on their favorite trout streams. Caddis flies have gained attention in recent years and more and more dry fly patterns representing *Tricopterans* are appearing in the boxes of fly fishers everywhere. Although most of us carry a selection of stone fly nymphs, dry fly patterns representing adult stone flies are still relatively few. However, there are exceptions.

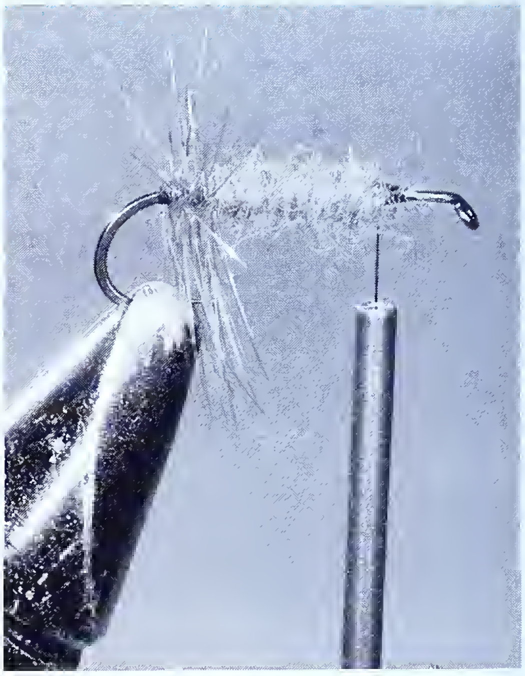
In the West the spectacular hatches of huge *Pteronarcys* and *Allonarcys* stone flies, the so-called salmon flies, have spawned such dry fly patterns as the Sofa Pillow and Troth's Salmon Fly. During the 1930s, Paul Young designed a dry fly he called the Michigan Stone, representing the smallish, pale stone flies known as the Yellow Sallies, and the pattern has gained enthusiastic acceptance by the relatively few anglers in the Midwest and East who have tried it. In past *Angler* columns I described a Little Black Stone Fly and a large Egg-Laying Stone Fly, as well as Mr. Young's Michi-



1 Tie in the thread at the rear of the shank. Select a hackle with barbules as long as twice the hook gap width and tie it in with the dull side toward the rear.



2 Wind the hackle in close turns and tie it off. With fine-pointed scissors, trim a "V" in the hackle above the shank.



3 Wax the thread next to the shank and pinch-dub fur onto the thread. Wind the dubbed thread forward to produce a medium-thick body. Tie it off at about one-fourth the shank length behind the eye.

gan Stone, and these are dry fly patterns I would find it difficult to be without over the course of a season.

I suspect one of the principal reasons anglers have eschewed stone fly dries is the perception that stone flies always crawl out of the water—on boulders, logs or other projections—to emerge. If such were the case, too few adult stone flies would likely appear on the surface to interest the trout, except possibly on windy days.

I shared this belief for many years until I began to fish gravel-bottom streams totally devoid of boulders and I observed stone flies emerging at the surface in midstream, just like many mayflies. At first I really didn't believe what I was seeing and passed off the event as some kind of freakish, one-time happening. After all, this wasn't what the books described. But after seeing the phenomenon repeated many times I discussed it with other anglers and found they were seeing it, too. And not only were we finding this seeming discrepancy in stone fly emergence, we were also observing surface emergence with crane flies and *Isonychia* mayflies, both of which were always supposed to crawl out of the water to emerge.

Nowadays, many think we had grossly underestimated the adaptability of nature's creatures and that aquatic insects are not limited to a single mode of emergence. We are also finding it risky to use the words *always* and *never* in matters of natural history. We have discovered, sometimes to our own embarrassment, that nothing is etched in stone.

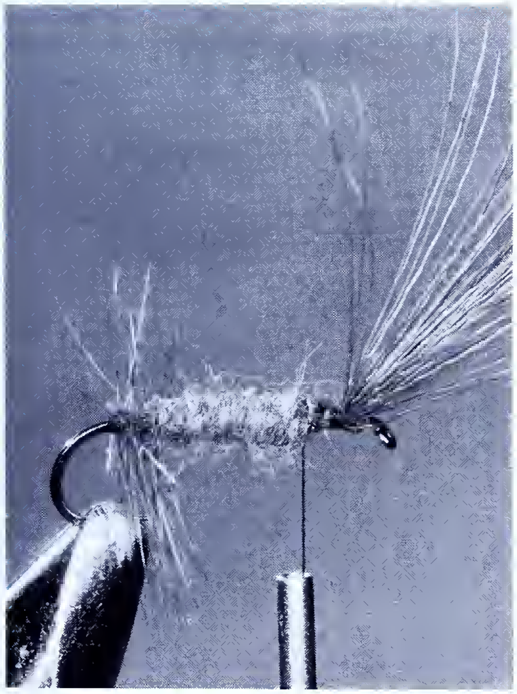
A few years ago, while rummaging through my fly boxes in an idle moment, it occurred to me that except for the little black stones, most of my stone fly dries were brown and yellow or all yellow. Somehow I had neglected to represent the gray stone flies that are perhaps not as plentiful as the brown/yellow species but nevertheless warrant a compartment or two in the fly box. That's when I began tying the Gray Stone and my first use was memorable.

There is a deep run along an undercut bank where I often fish. Some fine brown trout live in the shelter of the bank and I've caught and released enough of them to make them very wary of me. I fished there the afternoon I first tried the Gray Stone and with it I caught three fat browns of 13 to 15 inches on three consecutive casts—and all without moving from my tracks. You'll have to forgive me for feeling a bit giddy; that was definitely not my usual, every-day performance!

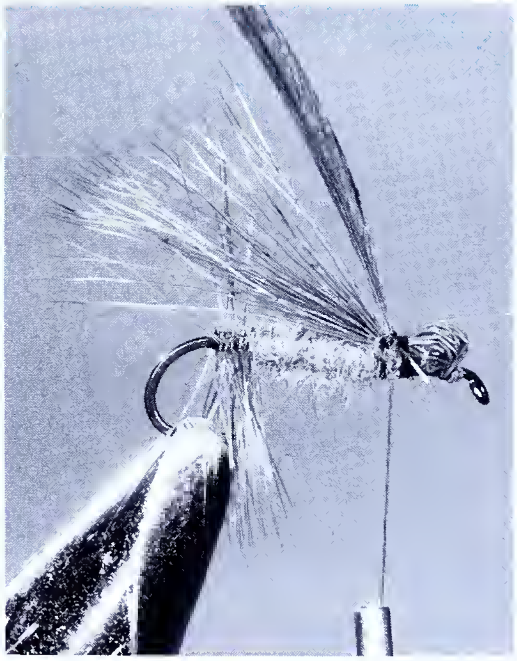
The Gray Stone is not a difficult fly to tie. I dress it on size 12 and 14 fine-wire long-shank hooks (Mustad 94831 or 94832 are good choices) and it is hackled fore and aft. In varying degrees, most hackle is slightly concave across its width on the dull side. This aspect may be used to advantage in fore-and-aft hackling by securing and winding the rear hackle with its dull side to the rear, and the front hackle with its dull side toward the eye. In this configuration the strong sides oppose each other and provide the utmost stability on the water.

Dressing: Gray Stone

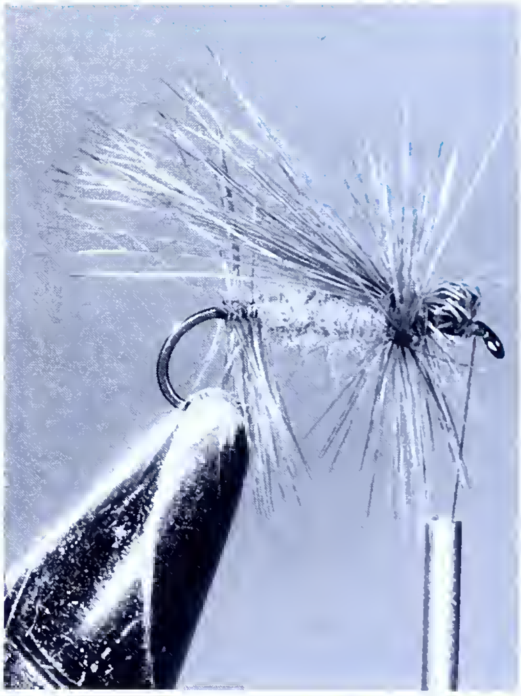
Hook: Size 12 or 14 Mustad 94831 or 94832 or equivalent.
Thread: Black 6/0 prewaxed.
Hackle: Medium dun, dressed fore and aft.
Body: Gray fur or synthetic.
Wing: Thin gray deer hair.



4 *For a wing, cut a bunch of thin, gray deer hair and even the tips in a stacker. Measure the hair against the shank and trim the butts, leaving a hair length of twice the shank length. Tie in the hair by its butts in front of the body with the tips extending over the eye. Trim the excess butts.*



5 *Place your dubbing needle over the hair behind the eye and fold the hair up and back over the needle, forming a head in front and a downwing over-body. Hold the hair in this position and withdraw the needle. Then bind the hair securely behind the eye. Select a second hackle with the barbules slightly shorter than the rear hackle and tie it in behind the head with the dull side toward the eye.*



6 *Wind the front hackle, tie it off and whip-finish the thread behind the eye. Apply lacquer to the head windings and hair head.*

LOW-WATER Smallmouths

by Joe Reynolds

River smallmouth bass can be pushovers in ideal conditions, but it takes plenty of brain power, experience and special tactics to be successful as summertime water flows diminish and drought conditions plague Pennsylvania rivers.

Hot, humid weather—the "dog days"—can be a frustrating time for river smallmouth fishermen. Spring's sweet freshness is only a memory; trees and plants look exhausted; topsoil dries and cracks. Rivers are in no better shape, with flows reduced to a comparative trickle and water temperatures soaring.

Smallmouth bass must survive in this shrinking, overheated environment, and fishing becomes a challenge.

Unfortunately, too many anglers continue using the same lures and techniques in the same places that produced during spring and early summer. Then they blame their lack of success on the heat. Hot weather requires adjustments.

I remember one summer evening on the Susquehanna River below Harrisburg. An unrelenting sun had beat down on the water through the humid haze of a windless day. Pools and riffles seemed devoid of life. Hours of casting had produced only a few runts. Then, as the searing source of the day's sweltering heat dipped below the trees on the western edge of the river, a transformation began.

Like a snowstorm that begins with a light flurry, White Millers slowly dotted the darkening sky. At the day's last glimmer, they came in a blizzard of fluttering flakes, covering the surface of the Susquehanna with a quivering carpet of white.

Breathing drew flies into my nose and mouth; it was difficult to keep them out of my eyes and I was forced to squint even though it was nearly dark. Hundreds of Millers collected on my pant legs as I wet-waded into the water.

At the height of the hatch the adult smallmouth bass began to feed. Now the strikes weren't coming as often as during the earlier flurry stage of the hatch, but I wasn't unhappy. These fish were larger, deep-bodied smallies that pounced ferociously on the popping bug. Their jumps were barely visible in the near darkness.

Then, just as suddenly, it was over. The summer blizzard abated and the river once again became smooth, now reflecting the cool light of a rising full moon. For a few minutes I stood there, feeling the push of the river against my legs, and reflecting on the hours of useless casting earlier in the day compared with the incredible action of the past half-hour.

This section of the Susquehanna was popular, yet I was the only angler there when the action began. Other anglers had called it quits just before sunset, dog-tired after long hours in nature's oven. If they had known what was about to happen, most would not have left so soon. Rising smallmouths can breathe new life into any fisherman.

Those fishermen missed the best that day offered because they were not knowledgeable about the hatch. Most of them had good tackle and all the right flies or lures—important, to be sure, but the critical factor will always be that biological computer located behind the eyes and between the ears.

I knew from experience that there was an excellent chance for a White Miller hatch just after sunset during that time of year. Trout addicts often arrange their lifestyles around the major fly hatches, but smallmouth bass fishermen don't give the flies proper attention. Hatches are important, even for those who don't happen to be fly fishermen. Quite often the bass strike anything that moves during a heavy hatch; the massive quantity of food sets off a feeding binge.

Anticipating the major hatches is even more important when river waters are low and warm. Oxygen levels are depleted and the bass don't expend energy during periods when food is scarce and requires too much effort to obtain.

As oxygen levels become extremely low during an extended period of hot, dry weather, bass leave their normal haunts. Humans do the same on muggy, humid days, retreating to the comfort of air conditioned spaces. And also like humans, smallmouth bass tend to eat less at those times.

When water levels are low and temperatures high, look for smallmouth just below the heaviest riffles. Turbulent flow oxygenates the water and bass may gather in great numbers. Areas below dams are also good for the same reason, but observe caution near low-head dams.

Hydroelectric dam tailwaters are another area worth investigating when the flow is below normal. You can just about forget these spots when the flow is cut off at the dam, but action can pick up during times the turbines are in operation. Again, it is the oxygen-rich water that turns on the smallmouth.

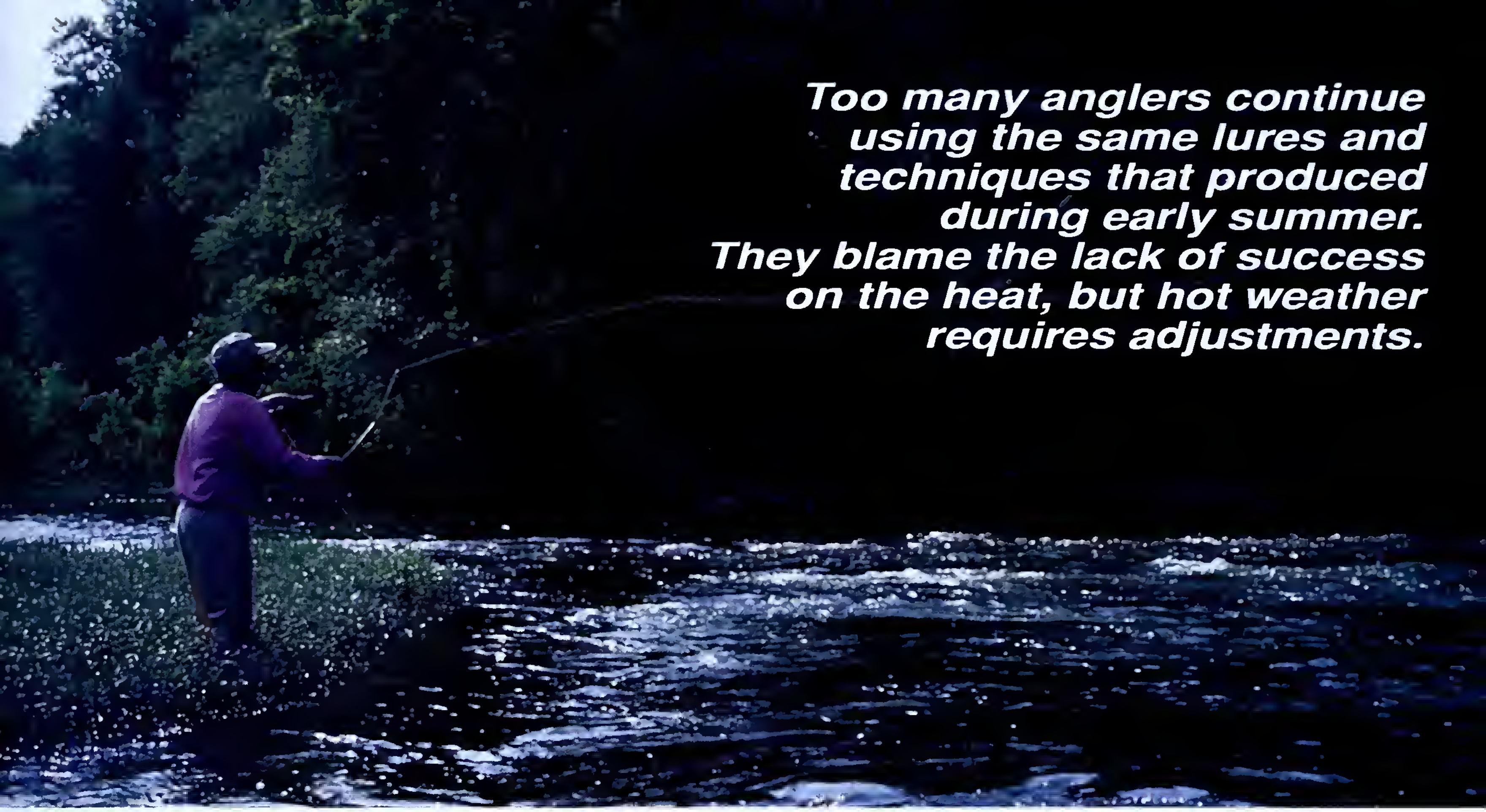
During the low-water, high-temperature days of summer, a river smallmouth bass fisherman's best bet is to fish very early or very late in the day. A flurry of activity is nearly guaranteed around first light; many times it will be the only productive period until just before dark.

Night fishing

Those with a masochistic bent may want to try night fishing. I wouldn't advise it unless you are already very familiar with a river. Float fishing on a dark night is like playing Russian roulette. Wading a big river isn't much safer.

Nighttime smallmouth success usually entails a good deal of daylight exploration to locate the potential haunts of larger bass. Experts pick their spots, working one or two areas during the course of an evening, without too much moving around. It takes a special breed to work the midnight smallmouth bass shift, but the rewards are often worth the effort.

If you must fish low summer water during the heat of the day, be prepared for more than a moderate amount of frustration. Some days nothing seems to work but there are a few techniques that have produced bass for me in the past.



Too many anglers continue using the same lures and techniques that produced during early summer. They blame the lack of success on the heat, but hot weather requires adjustments.

You will take more smallmouth if you treat one small part of a big river as if it were a 20-foot-wide stream. Scratch the notion that the biggest bass are always a hundred feet from where you stand. Don't look for bass across the river; look for them at the end of your rod tip.

If popping bugs or streamers fished on a long line don't produce in a hurry, I'll switch to short casts and fish nymphs or wets upstream. Spin fishermen can do the same with tiny plastic-tailed jigs. Pick your spots for this short-lining. You can spray long casts around at random, but with the short casts you want to pick a specific spot where bass are likely to be holding. Work quietly and keep a low profile. Remember, you are expecting strikes from bass only 15 feet or less away.

This system is especially productive when fishing a weighted nymph or jig right on the bottom. Each likely area should be worked carefully before moving on. Often the strikes are barely perceptible. At 10 feet you can see the slight line or leader movement when a bass takes. At 50 or 60 feet it's nearly impossible to detect a strike.

Anytime the smallmouth are feeding right on the bottom, which seems to be nearly always, a short-line expert can take more bass than the picture-book caster. This holds true for both fly and spin fishermen.

Casts across current can be effective with a sinking fly line, but problems develop if the line goes too deep. In this case it is not the fly that snags on the bottom—rather, the fast-sinking line hangs up on rocks. If this is a problem, make casts downstream, let the line sink, and then retrieve with slow, short jerks of the line.

When water levels drop close to the river bed and clarity is at a maximum, smallmouth bass become paranoid. Their world is shrinking, they feel exposed and they are less likely to move about during daylight hours.

Select fly lines and rods with the water conditions and the fish's paranoia in mind. Most times I use an 8-weight line, but for low water conditions I switch to a 6-weight outfit.

With anything less than a 6-weight line it becomes difficult to cast many of the larger smallmouth poppers and streamers. Fishermen with older fiberglass rods even have difficulty with the 6-weight line. The best bet is a graphite rod in the eight- to nine-foot lengths.

Leaders do not need to be excessively long. For low-water smallmouths I like to go with a leader about nine feet long tapered to a four-pound-test tippet.

Remember, however, to keep sinking line leaders short. This helps keep flies closer to the bottom. Spin fishermen should be using ultralight outfits and reels spooled with four-pound-test line.

Rain is scarce during the dog days. At best we can hope for the occasional thunderstorm to provide cooling relief. Lightning is scary and dangerous, but a little cool rain and a short respite from sunlight can work miracles on river bass, often touching off a brief period of frantic feeding. In any case, be safe and stay away from the water while an electrical storm is in the immediate vicinity.

Low-water success quite often depends on a knowledge of the river environment more than specific fishing techniques. In general, dark, drab-colored flies and jigs seem to be better low-water producers than rainbow-hued designs. Some anglers claim success with exact imitations of hellgrammites and such, but I'm not one of them.

Low water indeed presents challenges, but meeting and overcoming those challenges can provide a real sense of accomplishment. Strange as it may seem, there is still much room for experimentation and development of flies for specific smallmouth bass fishing situations. With more and more good fly fishermen concentrating on smallmouth, we can expect to see a variety of new flies and techniques that will increase our success, especially in low-water conditions.

Dog-day smallmouths may be contrary and frustrating at times, but wet wading for river bass is an important yearly ritual. I'd sooner pass up fireworks, apples on a stick, chocolate-flavored snowballs, opening day of trout season, mom's apple pie and six episodes of "Cheers."

A Lake for All Seasons:

In spring, summer, fall or winter you can find fishermen searching for excellent catches of a variety of fish on Lake Wallenpaupack. Located in the northeastern part of the state, the lake is ideal for the sportsman who wants to get off by himself, or for the family interested in having all its members become involved in an outdoor activity that is both fun and wholesome.

The Leni-Lenape Indians named a stream flowing through this area "Wallenpaupack," meaning "the stream of swift and slow water." The land owned by William Penn was deeded to his son, and later to James Wilson, one of the signers of the Declaration of Independence and a United States Supreme Court justice. With the decision that a hydroelectric dam was necessary, Pennsylvania Power & Light Company (PP&L) named the site Wilsonville, in his honor.

To create the dam, most of the buildings, homes, barns and farms had to be moved or razed. Trees were cut and 17 miles of roads were rerouted. Flooding the valley created a 5,700-acre lake, 13 miles long with a 52-mile shoreline, enhanced by many coves. The concrete dam, 70 feet high and 1,280 feet long, was completed in 1926. A dike at Tafton was constructed to complete the lake bed. The depth of the lake varies between 40 and 70 feet.

Before construction of the dam, the population numbered around 500. Since the creation of the lake, Wallenpaupack has become one of the best fishing and recreational spots in the state, attracting anglers from all sections of the country.

Wallenpaupack

by Bill and Bert Schill

photos by the authors

Four plots of land at various locations around the lake were set aside by PP&L for public use and access to the lake. Ledgedale, Ironwood Point, Wilsonville and Caffrey Recreation areas provide campgrounds with electricity, water, showers, laundry facilities, a general store, boat rentals and dock space. Launch ramps, for a fee, are also available. All the camps remain open year-round but only with the restrooms and a frost-free water supply.

On the western shore of the lake, off Route 590, the Fish Commission maintains the Mangan Access, a free launch ramp. Near the access is a PP&L picnic area. Opposite the ramp, on the eastern shore, off Route 6, is the Wilsonville Dam and PP&L visitor center where photographs and exhibits of the hydroelectric project and the area's wildlife are displayed. A slide presentation explains the electric generating system. The adjacent Wallenpaupack Overlook provides a panoramic view of the lake.

Fishing variety

Lake Wallenpaupack is a smorgasbord offering a choice of brown and rainbow trout, pickerel, yellow perch, walleye, bluegills and crappies. In 1988, the state record brown trout, weighing 17 pounds, 12 ounces, was caught here.

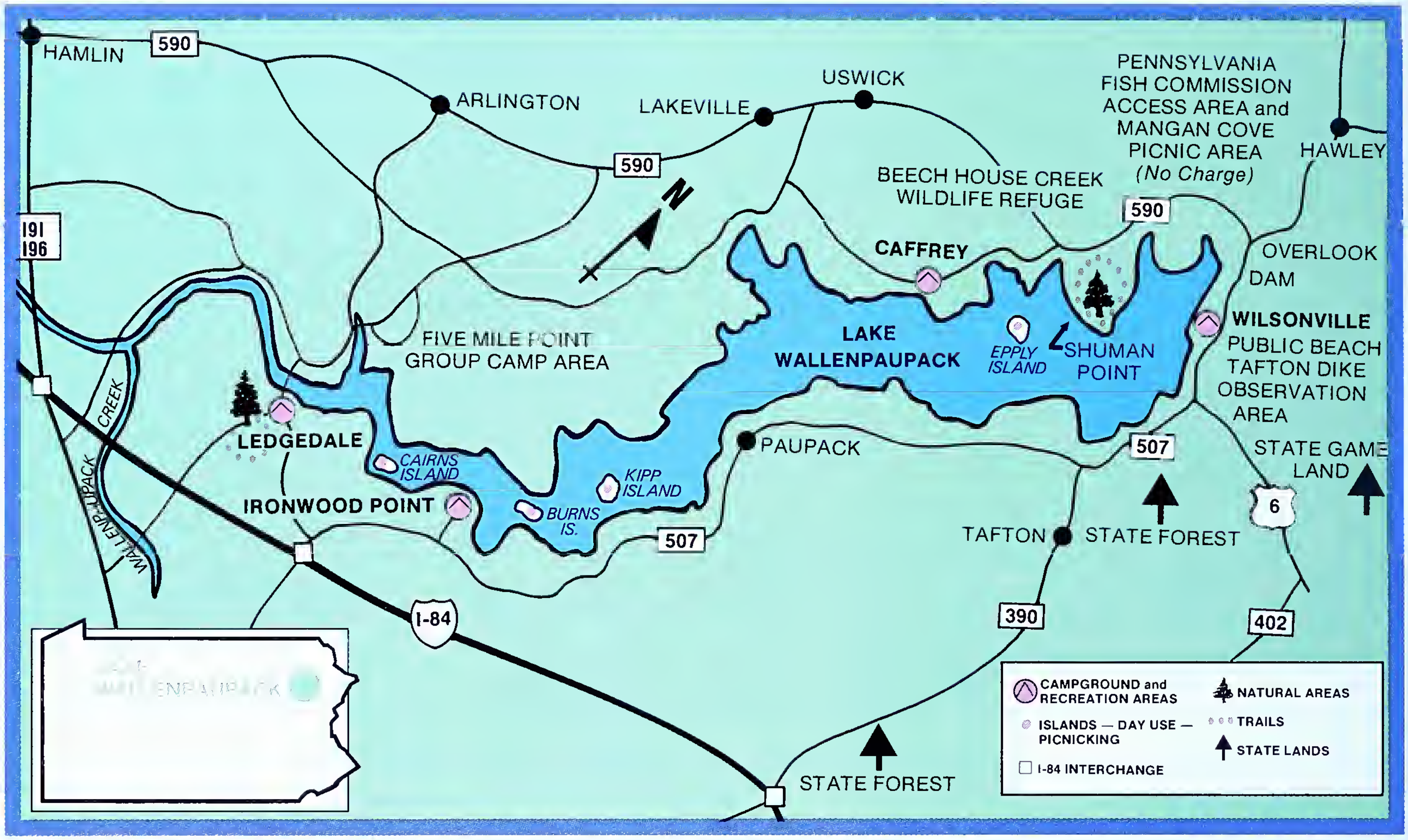
Beginning in 1990, the Commission stocked Lake Wallenpaupack with Seeforellen brown trout, a European strain new to the lake. Seeforellen browns live about 25 years and grow to 50 or 60 pounds. The Fish Commission also stocks Lake Wallenpaupack annually with striped bass, walleye and channel catfish.

Fishing contests are becoming popular and a yearly striped bass tournament is drawing much interest. Stripers introduced in 1980 are reaching more than 25 pounds and hybrids are also creating great excitement. Alewives introduced into the lake provide good forage resulting in an abundance of fish.

Angler Greg Walsh, from Scranton, invited us to accompany him one evening. After boarding his boat, we headed off to try some of his favorite coves. Greg has won many tournaments, including a Red Man Tournament on Lake Wallenpaupack, two in Canada and another in Maryland. He has also been in the top 10 of additional Red Man tournaments. Trolling with his electric motor, he kept close to the shoreline and started using spinnerbaits.

He told us, "I like to try different blades and colored skirts on my lures. Sometimes white will be great and then at other times, for whatever reason, yellow or chartreuse will be the 'grabbers.' I also find spinners, bug and rattle baits to be very effective.

Lake Wallenpaupack encompasses 5,700 acres. It is 13 miles long with 52 miles of shoreline.



Trolling and constantly casting toward shore where there is good structure, or around boat docks, usually pays off."

During our exploration of the lake, we met Peter Porter, an avid fly fisherman who lives in the area. Questioning him about trout fishing in the lake, he said, "Early mornings and late evenings are the times to fly fish. Watching the hatches come off the water is the best way to determine the lures to use. However, you can also enjoy some exciting hours fly fishing for bluegills, rock bass, crappies, smallmouth bass and largemouth bass. The popular lures seem to be poppers and small dry fly patterns."

Another avid angler is Skip Regensky, who lives year-round at Paupack and fishes every chance he gets. Skip is very knowledgeable about the lake and took us to Sunset Point where there were several weed patches. We had some good hookups and while we fished, he said, "Shuman Point is excellent for striped bass. Tafton Dike, in early spring, is the place to try for stripers and perch. The wall of the dike extends down into the water eight to 10 feet and the fish feed around the wall."

There are four islands: Epply, Kipp, Burnes and Cairns, and around them good catches can be made. Camping is not permitted on the islands, but fishermen can anchor and use the picnic grills and tables provided.

Nemanie Cove, on the eastern shore, is a protected cove with good stumps that keep the boat traffic down. When the lake is high, the water is farther back in the bushes, creating more feeding grounds. There is also a dropoff offering productive fishing for walleye.

"Some of my favorite lures are Lazy Ikes, Rebels, plastic eels and an Indian Joe spinner with a long shank and a worm. Hellgrammites, minnows and grubs are good for perch, bluegills, crappies and rock bass."

The peak season is summer, but winter offers an excellent challenge for the hardy soul who would like to fish through the ice. Family outings at Wallenpaupack are popular in the winter, especially during January and February. While dad and mom fish, the youngsters have a ball ice skating or sledding.

Although the angler's main purpose for traveling to Lake Wallenpaupack is to spend some pleasant hours on the water and maybe hook into a trophy, there are other times for him and other members of his family that can be very enjoyable. Several interesting and historic places can be visited within a few miles of the lake. One of the world's famous authors, and a 10-time record-holder for fish caught, was Zane Grey. His home, located on the banks of the Delaware River at Lackawaxen, is a free museum containing copies of all his books, plus memorabilia collected during his lifetime. Photographs of the ships he owned and the fish he caught are displayed on a wall in the museum.

Adjacent to the Grey property is the Roebling Aqueduct, the oldest existing wire suspension bridge in the United States. A national historic landmark, there is no charge to visit the aqueduct, which was originally built to carry coal-laden canal boats over the river.

A short distance from the Wilsonville campground is the restored Victorian town of Hawley with interesting shops and restaurants. An unforgettable museum is the Dorflinger Glass Museum, at White Mills, containing a stunning collection of beautifully etched crystal.

The entire Pocono area has a great deal to offer with many creeks, lakes and all sorts of attractions, but for a lake that has everything a fisherman can want year-round, Lake Wallenpaupack will more than satisfy.

For more information, contact: Cindy Chumard, Pocono Mountains Vacation Bureau, Box K, 1004 Main Street, Stroudsburg, PA 18360. Telephone: (717) 424-6050.

Sherwood J. Krum, Lake Wallenpaupack Superintendent, Pennsylvania Power & Light Company, Box 122, Hawley, PA 18428-0122. Telephone: (717) 226-3702.

illustration- Rose Boegli

KiDS PaGE!

by Kelly Countouris

Safety Comes First

1

Are you a safe angler? Do you know what it takes to be a safe angler? Everyone who fishes, no matter where or when, needs to remember and practice these safety habits.

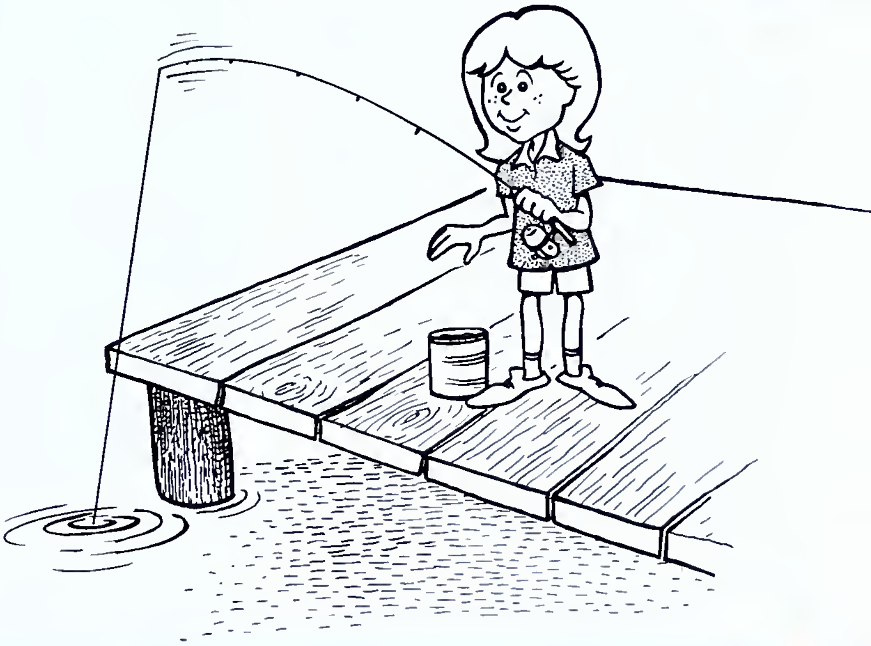
1. When around any water (lakes, creeks, rivers, etc.), walk when near the edge or the banks. This is especially important when it is wet or freezing outside. During wet and very cold weather, muddy or frozen banks become slippery.

2. Handle hooks and fish with spiny rays (bluegills, perch, catfish) carefully. Make sure you have first aid equipment with you in case a hook or ray accidentally ends up where it shouldn't.

3. Always secure your hook to the guide on your rod when not fishing. A loose hook is trouble.

4. Stay clear of others when they are casting and check behind you before casting your line.

5. When fishing from piers, docks or banks, stay a few steps back from the edge. A good cast takes your line far out into the water and then you won't have to worry about your footing when a big one bites.



SECRET CODE

Now break the secret code below for one last safety message. One set of letters has been substituted for the correct letters. Remember, when "B" stands for "A" in one word, it stands for "A" in all other words, too. (HINT: B=A, O=N)

BMXBZT XFBS B QFSTPOBM GMPUBUJPO EFWJDF (MJGFWFTU) XIFO GJTIJOH GSPN B CPBU PS XIFO BSPVOE TXJGU, NPWJOH XBUFS.

Secret code answer: Always wear a personal flotation device (lifevest) when fishing from a boat or when around swift, moving water.

Illustration: George Lavanish

FLATHEADS

The orange sun just sank behind the hills as Jim turned his pickup truck onto the narrow dirt road that led us into the Allegheny River valley. I looked at Larry, who was sitting in the middle, and saw a big grin, much like my grin. We were in for something different, something new to both of us.

Jim Rogers hosted Larry and me on our first serious fishing effort for flathead catfish. Jim is a real catfish king. He holds the Pennsylvania state record for channel catfish—35 pounds—but his specialty is the flathead cat.

Flathead catfish are one of the biggest catfish species, reaching a maximum size of about 100 pounds. They are native to rivers in the Mississippi drainage from the northernmost state south to the southernmost, and in northern Mexico. Sometimes called shovelheads, one of the flathead catfish's distinguishing characteristics is a flattened head. The lower jaw is longer than the upper jaw, the tail is rounded, and the adipose fin is large. Color varies from yellow-brown to dark brown on the back and sides, and dirty yellow or tan on the belly. Most have dark blotches along the sides, not distinct, but clearly visible.

Flatheads have never been as popular as channel catfish and some smaller members of the catfish family because most anglers seldom encounter them. Flatheads sometimes move into shallow water at night, but for the most part they inhabit the big, deep pools of large rivers, generally over hard bottom.

"The deepest water you can find, where there are big rocks along the shore," is Jim's advice for locating flathead cats. "My dad said they go under those big stones during the day.

"The line nearest shore usually gets the first bite. That's another reason I think they come out from under those big stones."

Jim, who retired in 1986, has been fishing for flathead cats since he was a boy. He was taught by his father, who was raised just upriver from where we were going fishing.

"My mother used to have big fish fries," he recalls. "We'd feed the neighborhood, feed the church."

Most of the flathead cats Jim catches weigh less than 10 pounds, but he has caught many that weighed between 20 pounds and 30 pounds. His largest was a 44-incher that weighed 37 pounds.

"When my dad got out of work at 11 o'clock we'd go out fishing. There would be lights all up and down the river. Now there's no one," Jim says.

We arrived at the river, and the only light was from the headlights of Jim's truck. He circled the truck on the gently sloping gravel bank to position the trailer for launching.

"It's hard for me to understand, with all the outdoor stuff going on now and there is nobody out enjoying this," Jim says.

Anglers like to talk about the good old days, usually commenting on how much better the fishing was then, and often using that as an excuse for not going fishing now. Jim obviously has fond memories of the good old days, but he surprised me when I asked how the fishing compared.

"If you hit the right weather and the right nights, it's just as good as it ever was," he says.

Most of our gear was already in the boat: Rods and reels, extra hooks and sinkers, bait buckets, flashlights and snacks. Jim's 18-foot flat-bottom boat is an impressive river craft. It is wide enough to stretch out and relax in, and the 70hp outboard jet can skim over the riffles in water less than four inches deep, which Jim demonstrated before we began fishing.

After a short run upriver, Jim headed the boat back downriver. He slowed, turned off the motor, and pointed to the place we would fish. While we drifted into position, Jim explained how he chooses a fishing area.

"The foam usually goes over the deepest part of the river," he says, pointing to the dirty white froth floating around the boat. Foam forms wherever the water is agitated, such as riffles that separate the river pools. It floats downriver mostly in the main channel, creating a long white stripe that marks the channel.

Flathead cats live in the deepest parts of the channel, and even though this is the main river current, Jim advises looking for places where the current is mildest. This typically occurs in the middle of a big river pool, where the river widens.

We set the anchor to hold the boat in the current.

I also noted the other things that Jim has explained about good flathead cat water. Big boulders lined the shore and presumably were also underwater. The anchor rope slid through my hands for about 20 feet before contacting bottom. Jim had mentioned 20 feet as a good depth for big flathead cats.

Most of the flatheads Jim catches weigh less than 10 pounds, but he's caught many that weighed between 20 and 30 pounds. His largest was a 44-incher that weighed 37 pounds.

Tackle

In the last bit of daylight that remained, Jim showed us his catfishing rigs and explained the logic behind his using them. He uses short, stiff rods, and big, old, revolving-spool Ocean City reels, the kind you might expect to see on an ocean-going party boat. The reels were loaded with heavy braided line.

"I don't use anything less than 50-pound line, so we can get them in fast," Jim says. "I know from experience that a flathead can break twice its weight in line. A 20-pounder will break a 40-pound line when it lunges."

Jim sensed that I was about to ask why he doesn't take the time to enjoy the fight.

"The reason we don't play catfish is that when they start biting, the idea is to get them in the boat and get the line back in the water while they are still biting. It's a matter of what you want to do, if you want to play, or try to get a big one."

He figures that they travel in schools, or else they all go on a feeding binge at the same time. During a good night it appears as if schools move through because the pickups come in flurries.

A Special Breed of Catfish

by Mike Bleech
photos by the author

Jim Rogers with a typical Allegheny River flathead catfish.

Bait

Jim keeps his bait bucket hidden in a small creek along the road to his river launching point. It's filled with fat chubs, about four to seven inches in length. The big flathead cats could easily take much larger bait, but Jim finds hook-setting more difficult with larger bait.

"The hardest part of catfishing is getting the bait," Jim says, "but it's kind of fun, too."

Jim catches all his bait from a particular creek, using a fly rod and a small hook baited with a piece of worm. Maybe those chubs taste better than other chubs. Whatever the reason, I trust Jim's judgment—and a half-century of flathead catfishing.

He tried other baits. Shiners proved worthless, possibly because these minnows do not use the same niche as flathead cats. All he could catch on chicken livers was water dogs. Nor have the flathead cats shown any interest in stink baits. However, Jim has identified some of the flathead cat's natural foods.

"Every catfish I have cleaned was just full of crabs (crayfish)," he says, "but I have never used crabs for bait. I imagine they would work.

"When I was a kid my dad and I would throw the catfish we caught in a pond. We would throw rock bass in there, too. Then when we got the catfish out to eat, they would have the rock bass in their bellies."

Both crayfish and rock bass share the flathead cat's niche on the rocky river bottom.

Jim ties a 3/4-ounce sinker to the end of his lines. Then he ties two large hooks to short dropper lines. I asked him which size and style hooks he uses. He said he did not pay attention to that. He just buys hooks that look big enough. The chubs are hooked through the lips, from the bottom up, lightly so that they remain lively. Flathead cats are carnivores, not scavengers.

When Jim tossed out his baited lines by hand it brought back memories of my childhood, before the time of spinning reels and level winds with casting brakes. First he pulled several coils of line from the old Ocean City reels. Then he swung the rig around a few times before letting it fly. As the rig sank he fed out line so that it would not swing back toward the boat. When the sinker settled on the bottom, he pulled all the slack out of the line and set the reel in free spool with the clicker on.

By this time the last daylight was gone. A few stars were visible but fast disappearing behind increasing cloud cover. Jim voiced his approval of the clouds. It was very dark in the narrow river valley with no moon or stars. That was perfect, according to Jim.

"The darker the better," he says.

Night moves

Fishing for flathead cats is strictly a nighttime operation. Jim explains that the best times to fish for flathead cats are during the last quarter moon and the new moon, during May, June, July, August and September. Fishing is best when the moon is not in the sky.

"August is always best," he says. "A hot, sultry night."

Fog or heavy cloud cover is good. He likes low, clear water.

"My dad always said the rain stirred them up."

Jim's favorite fishing hours are 9:00 p.m. to 11:30 p.m. He often fishes until after midnight because the bigger flatheads generally hit later.

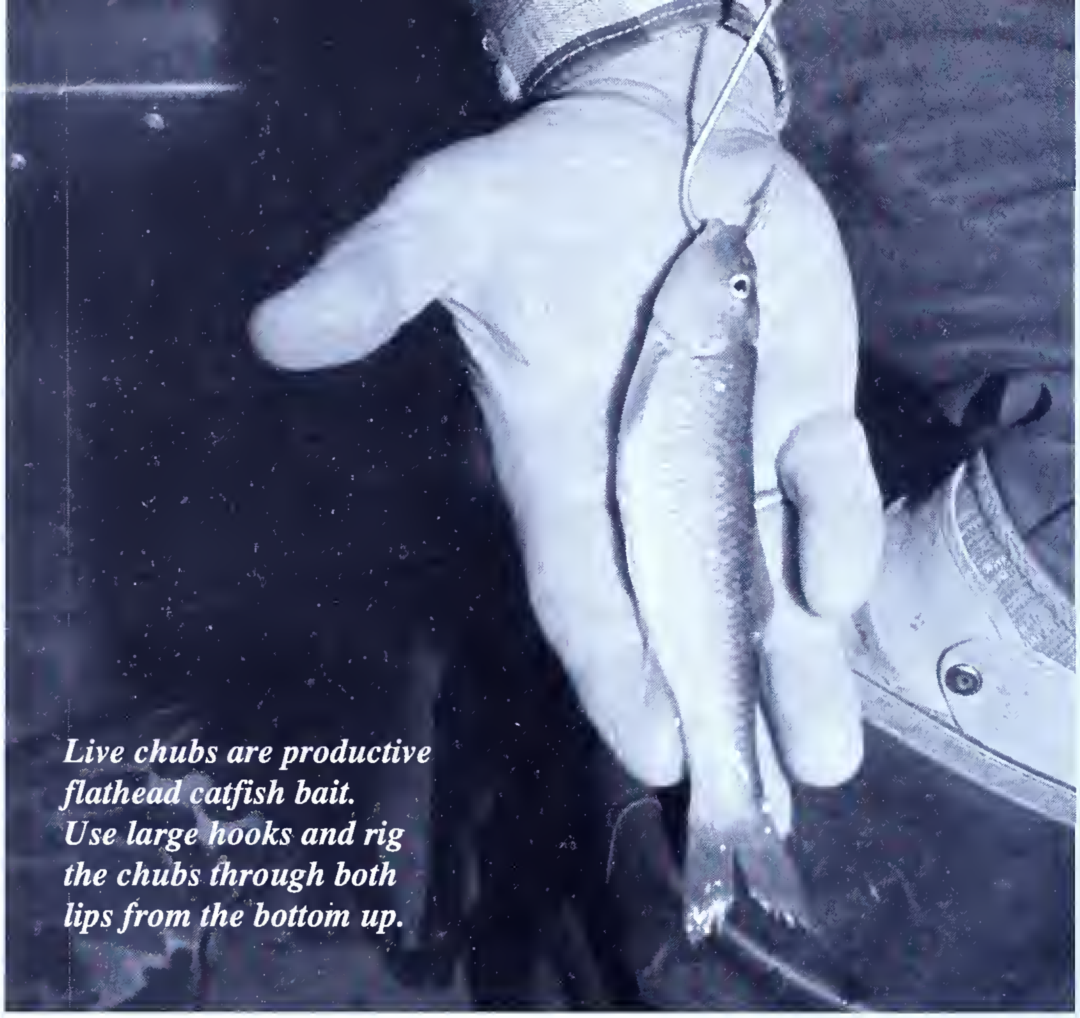
"From 11 o'clock to 2 o'clock is when you'll catch the big ones," he notes.

We sat in the darkness waiting, sometimes talking, sometimes listening to the sounds of the night. It was so dark, we could not even see one another sitting just a few feet apart. Several hundred yards downriver a screech owl serenaded us with its high pitched *hoot-oot-oot-oot-oot...* Another upriver answered.

A few comfortable, peaceful hours passed. The conversation faded. What a marvelous change from the usual routine of television in the evening. I drifted into that stage of half consciousness, perhaps meditation, when the mind truly relaxes. It is the time when, as a writer, I could do my best work—if I could get the thoughts onto paper without breaking the mood.

Clicking noise

A clicking noise right beside me interrupted the spell. At first it did not register. Then I remembered that I was fishing, and that my reel was set in free spool with the clicker on...and that clicker was clicking. Still I did not get into motion until Jim said softly, "Do you have a pick-up, Mike?"



Live chubs are productive flathead catfish bait. Use large hooks and rig the chubs through both lips from the bottom up.

I picked up the rod. Line still peeled out, making the clicker sound, so I flipped the lever that engaged the spool and tried to set the hook.

Nothing.

"Let it lay there," Jim urged, before I started reeling in line.

I dropped the rod tip to let the bait settle back to the bottom, flipped the reel back into free spool, and waited with the rod in my hands.

Seconds later I felt a tug, and line began accelerating off the reel again. I engaged the spool and jerked back on the stiff rod again. This time I felt something solid.

First nothing moved, and I wondered if I were just snug on the bottom. But the rod began to throb and the fish pulled out line. It felt as if I were hooked to a boulder rolling down steps. Remembering that I was using heavy tackle I started pumping and reeling, following Jim's advice to get the fish into the boat quickly. Even the catfish fought hard. No wonder few anglers see these flathead cats—not many anglers are equipped to catch them.

When the fish was alongside the boat, Jim reached into the water and swung my first flathead catfish aboard. It was somewhat over 25 inches, I guessed, maybe seven pounds. It had fought as if it were bigger. I unhooked it, held it long enough for Larry to take several photos, and slid it back into the water.

Jim got another chub from the bait bucket for me, and I re-baited and cast out my rig, making as little commotion as possible. Jim had cautioned Larry and me about the skittish nature of flathead cats.

"My dad always told me to be quiet, and not to shine lights," he says. "But when they'd start hitting well they would grab a bait right beside the boat. When they go into a feeding frenzy they just go crazy."

We did not see a feeding frenzy, but we did catch a half-dozen more flathead cats that evening. All the action came within a one-hour period, as Jim had predicted.

Jim had 24 pick-ups during his best night of flathead catfishing. He had a first-time cat angler with him that night.

"I get more kick out of taking other people than catching them myself," he said.

That was apparent. Jim was a delightful host. His stories of growing up along the river were a treasure, and the tips on flathead catfishing were an education I will put to good use.

At 1:00 a.m. we called it quits, after an hour of no pick-ups. An hour later we were back on top of the river ridge, back in the civilized world of artificial lights and sounds.

Then it really sank home—what a rare treat it had been, a night in the wild hidden from civilization by that steep river valley and that moonless sky. I guess flathead cats will never be popular fish, thank heavens.

Flathead Catfish Tackle

One reason so few anglers catch flathead cats is because few anglers use heavy enough tackle to handle big fish. Jim Rogers uses nothing lighter than 50-pound line so that he can horse in the flathead cats. You can use somewhat lighter gear, but remember that these fish can grow to 100 pounds. I use a rod that I bought for ocean pier fishing, a seven-foot casting rod rated for 15- to 30-pound line. My reel is loaded with 25-pound line. If I were fishing somewhere flathead cats weighing over 50 pounds could be expected, I would use heavier gear.

Hook size should correspond to the size of the bait. As a general rule, for the four- to seven-inch chubs Jim suggests as bait, a size 1/0 or 2/0 hook is adequate.

Flathead cats live in deep water, in current, so you need a reasonably heavy weight to keep the bait planted on the bottom. Use an assortment of weights from 1/2-ounce to at least one ounce.—*MB*

Cooperation is the KEY

by John W. McGonigle

For the last several years the Delco-Manning Chapter of Trout Unlimited has been involved in a cooperative effort with the Fish Commission on stream improvement projects. Working on Ridley Creek in Delaware County, the chapter, with guidance from the Fish Commission, has completed projects aimed at protecting stream banks, narrowing channels and increasing stream flow. In addition, the chapter has erected a casting platform for disabled anglers.

Recently, a project planned for nearly a year was completed. Because of heavy fishing pressure during trout season, work was scheduled for late summer when both fishing pressure and water levels were low.

Karl Lutz, Eastern Area Coordinator for the Commission's Adopt-a-Stream Program, worked with the chapter Stream Improvement Chairman Ron Soto. Lutz selected the recently completed work sites for two reasons. Lutz says, "The stream was too wide here, and there is severe bank erosion caused by both water flow and fishermen's access to the stream."

It was jointly decided to protect the bank and narrow the channel by installing several jagged deflectors, made of rock one to two feet in diameter. According to Lutz, the reason for using a jagged deflector is to create more "edge," or fish habitat. The jagged deflector provides cover for both baitfish and the larger trout that prey on them.

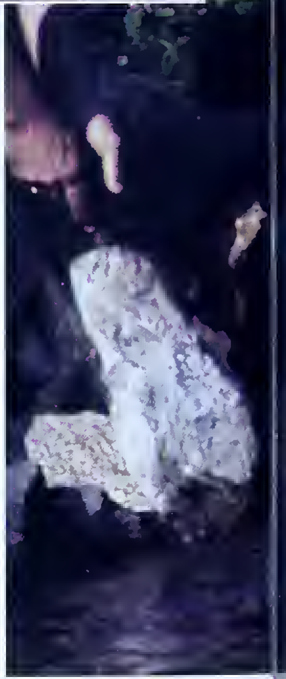
"At this particular spot," says Lutz, "there is a nice hole in front of the deflector. Combined with all the nooks and crannies created by the new deflector, we have very good trout habitat.

"The clubs involved on these projects should get the credit for all the work they do and the conservation work they accomplish," says Lutz.

Keller, a seasonal employee, echoes his boss's sentiments and adds, "It's good to see the involvement and dedication displayed by Trout Unlimited and the other organizations we work with."

One problem noted by both Lutz and Keller at Delco-Manning's work session, as well as at others, is the low number of young people. Says Lutz, "We've got to get our young people involved. They're the future of both our sport and our environment."

Barry Hall, chapter president, agrees with Lutz, but says, "The activities of TU, including habitat improvement work, is drawing more members and increased involvement. I hope more young people become involved to help with and carry on what we have started."



Working with stone the size of that used for this project calls for more than manpower. The chapter rented a backhoe for the day, and is fortunate to have an experienced operator, former club president Fred Peifer, to run it. Peifer went to work laying the foundation for the deflectors by moving the heavier stone into place. Smaller stone placed on top was then moved by hand to form the solid barrier needed to protect the stream bank from high water.

Ron Soto was pleased with the cooperation received from several quarters. "For starters," says Soto, "the Fish Commission has been helpful every step of the way, right down to Karl and Dave showing up in work clothes to lend a hand. As helpful as they've been, though, we've had additional assistance that took our project from the drawing board to completion."

Locally, the club received free stone and a reasonable price on having it hauled to the work site from Kiewit-Perini, a contractor working on a local highway project. Soto can't guarantee it, but he thinks similar arrangements might be available in other parts of the state if an organization takes the time to find it.

Funding, the nemesis of all volunteer organizations, was obtained from the Fish America Foundation. The chapter obtained a grant of $2,470 for work on Ridley Creek, to be completed in two stages. The foundation is an industry-related group dedicated to promoting the positive aspects of sport fishing.

Some people believe that Trout Unlimited is devoted to fly fishing only, but it should be noted that the present project is the first to be done by the chapter within the fly-fishing-only stretch of Ridley Creek.

"Finally," says Hall, "we are going to dedicate our efforts for a time to the fly-fishing-only section. It is the only dedicated delayed-harvest area in Delaware County. We're going to get involved with fall stocking, continue our stream improvement efforts, create additional trout habitat and establish a quality suburban fly stretch."

John W. McGonigle

Ridley Creek is blessed with good water quality and varied insect hatches, especially so for a suburban stream. According to Hall, "people like stream improvement projects." Combine these facts with the kind of cooperation shared between the Delco-Manning Chapter of TU and the Fish Commission, plus some additional help with materials and funding, and the future looks bright for anglers on Ridley Creek.

Delco-Manning TU Chapter members and Fish Commission Adopt-a-Stream Program personnel built habitat improvement devices on Delaware County's Ridley Creek.

Write to the Fish America Foundation for more information on grants. The address is: 1010 Massachusetts Avenue, N.W., Washington, DC 20001.

Pennsylvania's Biggest Largemouth Bass:
When, Where and How Anglers Catch Them

by Art Michaels

The Commission issued 162 Junior and Senior Angler's awards for largemouth bass catches made in 1990. To qualify for a senior award, largemouth bass must be at least five pounds. Four pounds is the minimum largemouth bass weight for junior awards. Records show that 19 of the 162 awards were junior awards.

When

Pennsylvania anglers caught their citation-sized bass during each month of 1990. Here are the numbers of bass caught during each month: January, 15; February, 3; March, 19; April, 13; May, 5; June, 30; July, 22; August, 22; September, 19; October, 6; November, 5; and December, 2.

Rich Zaleski

Where

Anglers caught these 162 largemouths in 74 Commonwealth waterways in 42 counties. Here are the names of those waterways with the number of bass fooled in each waterway: Lake Arthur, 26; Ontelaunee Reservoir, 13; Tamarack Lake, 11; and Peck's Pond, 6.

Four largemouths were caught in each of these waterways: Shohola Lake, Nockamixon Lake and Lake Wilhelm.

Three bass were fooled in these waterways: Marsh Creek Lake, Lilly Lake, Promised Land Lake and Cross Creek Lake.

Two were caught in each of these waterways: Allegheny River, Keystone Lake, Delaware River, Glendale Lake, Mauch Chunk Lake, Middle Creek, Middle Creek Dam, Alvin R. Bush Dam, Youghiogheny River, Buzzard Swamps, Yellow Creek Lake, Octoraro Lake, Lake Chillisquaque, Walker Lake, Lake Carey, Pinchot Lake, Schuylkill River, Lake Marburg and Lake Redman.

One bass was landed in each of these waterways: Birch Run Reservoir, Ohio River, Blue Marsh Lake, Kaercher's Creek Lake, Churchville Reservoir, Silver Lake, Connoquenessing Creek, Glade Run Lake, Hereford Manor Lakes, Stevenson Dam, Sayres Dam, Black Moshannon Lake, Oil Creek, Woodcock Creek Lake, Susquehanna River, Elk Creek, Fairview Gravel Pit, Lake Erie, Pleasant Lake, Monongahela River, Mountain Lake, Fords Pond, Lackawanna Lake, Octoraro Creek, Speedwell Forge Lake, Myerstown Quarry, Stover's Dam, Leaser Lake, Lake Jean, Brady's Lake, Tobyhanna Lake, Bradford Reservoir, Little Buffalo Lake, Penn Pocono Lake, Laurel Hill Lake, Youghiogheny Reservoir, Prompton Dam, White Oak Pond, Rossville State Game Lands Pond, Chestnut Ridge Dam, Keystone Lake, Lake Donegal, Loyalhanna Lake and L. B. Sheppard Reservoir.

How

Here are the lures and baits anglers used to catch these big bass, and the number of bass caught with each type of bait or lure:

Lure, 30; plastic worm, 22; spinnerbait, 21; jig, 20; buzzbait, 5; spinner, 4; and spoon, 2.

Live minnows accounted for 38 largemouths. Nightcrawlers took 17, and suckers fooled 3.

State record

No new largemouth bass state record was caught in 1990, so Donald Shade's record still stands. He caught the current state record in 1983 in Birch Run Reservoir, Adams County. The fish weighed 11 pounds, 3 ounces, and was 18 inches long.

Rick Nitkiewicz, of Pittsburgh, caught the biggest largemouth bass of 1990, a 9-pound, 10-ounce hawg that measured 26.25 inches long. The action occurred last September 3 at Lake Arthur. Nitkiewicz fooled the bass with a jig-and-pig.

Your big fish

The Fish Commission has published *Catch a Big Fish in Pennsylvania*, a four-page brochure that explains the Commission's Angler Recognition Program. The program includes Angler's Awards, Husky Musky Club, Record Fish and Biggest Fish of the Year. The publication has applications, a list of current Pennsylvania state-record fish, and minimum weights in junior and senior categories for eligible fish species.

For a free single copy include a business-sized stamped, self-addressed envelope with requests. Contact: Publications Section, Dept. F, PA Fish Commission, P. O. Box 1673, Harrisburg, PA 17105-1673.

Art Michaels

Meet Cecil R. Houser, chief of the Cooperative Nursery Unit. He and his staff oversee 156 sportsmen's clubs involved in cooperative fish-rearing at 183 hatcheries. Cecil coordinates the fingerling, fry and egg requests and deliveries among cooperative nurseries and the Commission, and he coordinates the stocking of these fish among the cooperative nurseries, WCOs and area fisheries managers. With his staff he inspects those 183 hatcheries, and he organizes and conducts six annual regional seminars for nursery sponsors.

Don't Rock the Boat

The small fishing boat tends to be unstable, making it easy to swamp or capsize, or tip enough to send a standing angler into the water, the leading causes of boating fatalities.

Standing in a small boat raises its center of gravity, which increases its instability. Many anglers have fallen overboard when they stood up to cast, play a fish, land a catch or answer nature's call.

The National Safe Boating Council points out that modern outboard boats have a capacity plate that indicates the maximum safe outboard horsepower and carrying capacity of a boat. A boat's capacity includes the combined weight of passengers, outboard and other equipment. The number of seats in a boat is not a measure of its capacity. All weight should be distributed evenly in the boat.

If a boat is overloaded, it has little freeboard (the distance from the waterline to the top edge of the boat), which makes it more likely to tip or for water to come in over the edge.

If the boat does tip, stay with it. Most boats today have flotation, and they will remain afloat if they are tipped. Boaters who fall in should stay calm, get back in the boat or climb onto the top if it has overturned, and wait for help.

Fishing, Boating in PA State Parks

For information on fishing and boating in Pennsylvania state parks, **call 1-800-63-PARKS**. The service can help you obtain answers to questions about state parks and the facilities and services each has.

I thought you might get a kick out of the enclosed picture of my nine-year-old son, Ken, proudly holding his catch of a beautiful walleye. He caught this fish on his first cast of the morning one day last fall. Ken and I often fish the Allegheny River near Franklin. We always use lures, and we always catch fish—walleye, smallmouth bass, northern pike and occasionally a musky. We release most of what we catch, but not before a picture is taken of those fish worthy of capturing on film.
—Cliff Miller, Pittsburgh, PA.

Roper "The Rope" Houston caught this 21-inch brown trout last fall in Black Bear Run near Winburne. He was fishing his way to archery camp. The trout was known locally as "Henry" and was the target of persistent efforts by "Weasel" Hubley and Billy "The Mink." Rope was using a worm. Black Bear Run is a beautiful, inaccessible mountain stream with natural reproduction of both brook and brown trout. The fishery is dominated by brook trout. Given the cold water temperatures and small stream size, it is a real trophy waterway. I aged the scales—the fish was a 12-year-old wild brown trout.
—Marty Marcinko, Coldwater Unit Leader, Bellefonte, PA.

NOTES FROM THE STREAMS

Big bait, big fish

How many times have you heard that you have to use big bait for big fish? While surveying the Allegheny and Youghiogheny rivers last summer, several large fish proved that big fish actually do prefer big dinners. Last August, biologists from the Southwest Fisheries Management office were surveying pool 5 on the Allegheny River near Clinton with gill nets. The day was routine with our net catching several carp, catfish, white bass and panfish. Then we hauled a large channel catfish into the boat. Interestingly, the catfish was not caught in the net; the net was caught in the catfish.

Apparently, the channel cat decided to dine on a seven-inch rock bass already entangled in the net. The catfish was able to swallow the rock bass, but very little of the 200-foot gill net.

After extracting the net and the rock bass, the catfish was measured and weighed. The big cat was 30 inches long and topped the scale at 12 pounds.

The next day on the lower end of pool 5 a similar situation occurred and this time the results were even more spectacular. A 32-inch, 16-pound flathead catfish swallowed a 15-inch channel catfish that was caught in the net. Finally, while electrofishing the Youghiogheny River below Ohiopyle last September, we collected a smallmouth bass near the mouth of Indian Creek. On closer inspection, the caudal fin of another fish was protruding from the mouth of the bass. After a careful extraction, this 14-inch smallmouth tried to consume an eight-inch river chub.—*Tom Shervinskie, Fisheries Technician, Area 8.*

Daring rescue

My family has a cabin located on an island in the Susquehanna River about a mile-and-a-half south of the Columbia Access. In this area the river is about a mile wide and between Columbia and the island there is a quarter-mile-long section that is rocky with shallows, deep holes and the submerged old canal dam. This area is strongly effected by Safe Harbor Dam's causing changes in the depth and strength of the current.

On Monday evening, July 2, my 17-year-old son, Mark, and I were returning to Columbia from the island through this area in our 14-foot aluminum boat. Safe Harbor was drawing water, so the current was strong and the water abnormally low. We had to go slowly because of these conditions. We saw a cushion floating downriver more than 100 yards to our right between us and shore. I looked upriver and on the old dam saw two men standing in and bailing a 12-foot aluminum boat. One man got back in the boat and attempted to restart the motor. We continued to make our way upriver to a point where we could safely render assistance while continuing to observe the men and boat.

Things went from bad to worse. Their motor started moving the boat into deeper water. The second man attempted to get back into the boat, but it was moving and he could not pull himself over the sides. He ended up hanging on under the bow with one hand on either side of the bow. The boat was basically on top of him.

We pulled alongside and told the man in the boat to shut the motor off and drop the anchor, which we also did. We instructed the man in the water how to come over the side of our boat. Mark and I moved to the opposite side to prevent capsizing our boat. While this was being accomplished, the man in the boat cried out. He stood in the stern of the boat. It was sinking stern-first, rolling over and throwing him into the water. We used the same procedure to get this second man into our boat.

With both men safely in our boat, Mark entered the water and was able to right their boat and retrieve what gear he could. Mark got back into our boat, and with the anchor line towed the boat back to where the boat had been rented.

These men had rented this boat for fishing. They had been advised by the rental agent not to take the boat into this area because it was an area they were not familiar with. Neither of these men could swim nor did they wear PFDs.

Mark and I feel strongly that if we had not been on the river that evening, drownings would have occurred. We could imagine the one man being run over by the boat, and the other drowning when the boat sank. Fortunately, only equipment was lost, not lives.—*Vincent B. Wickenheiser, Boating and Water Safety Awareness Instructor, Columbia, PA.*

Excuses, excuses

Here are 17 actual excuses for violating the Pennsylvania Fish and Boat Code fishing regulations as told to me and my deputies.

1. Why three men were fishing without licenses: "We were told that the wardens are on 40 hours a week and they don't work weekends." (This happened on a Saturday.)
2. Why the fisherman on Lake Wallenpaupack was fishing with only a New Jersey license: "It's reciprocal and this is an estuary of the Delaware River."
3. Why the fisherman had no license: "I was just practicing."
4. Why the three doctors were fishing without licenses: "We weren't fishing—we were only trying to catch some sunfish for the kids." (Kids nowhere in sight.)
5. Why the fisherman was fishing without a license: "I had no intent to go fishing. I just took my dog for a walk."
6. Why the fisherman kept a 14-inch bass during the closed season: "It's the biggest fish I ever caught."
7. Why the doctor left his fishing rods unattended for 45 minutes: "I had to go buy a fishing license."
8. Why the man standing on the dock was fishing without a license: "I own the dock."
9. Why the man's wife was fishing without a license: "Because I (husband) got a ticket for fishing without a license two days ago."
10. Why the fisherman was fishing in approved trout waters 40 minutes early on the opening day: "What time is it?"
11. Why the fisherman was fishing in approved trout waters one hour early on the opening day: "I wanted to get a good spot."
12. Why the fisherman had four trout over the limit: "The fish were really biting."
13. Why the fisherman, who had kept his limit of trout, was back fishing and possessed more trout: "My buddies weren't back at the cabin yet."
14. Why four non-resident campers were cutting down trees on private, posted property: "We needed firewood—we didn't think it would hurt anything."
15. Why the man had thrown papers on the ground: "We do that all the time on Long Island. The birds use it to build nests."
16. Why the woman had thrown out a bag of garbage and an old carpet along a stream (her checking account receipt in the

bag showed a balance of $17,648.93): "I didn't know what else to do with it."

17. Why three men, fishing with snagging hooks, possessed walleye during the closed season: "We were sucker fishing."

Here are 14 actual excuses for boating violations.

1. Why the motorboat owner/operator did not display his motorboat registration numbers on his boat (also why he failed to display his fishing license while fishing): "I didn't think anybody cared."

2. Why the female observer (clad in a skimpy bikini) was sitting on the motor cover of the tow boat: (Male skier's response) "So I could observe her."

3. Why the two male observers failed to notice the fallen skier. (We found the downed skier. The tow boat was 1/2-mile away searching for him.): "We were watching the girls on the docks."

4. Why the operator of the motorboat was turned around in his seat, talking to his passengers, while the motorboat was in motion: He was explaining to his out-of-state passengers how "the lake patrol stops boats for careless operation."

5. Why the owner of the motorboat with an illegal exhaust system did not stop for the siren: "I couldn't here the siren—my boat's too loud."

6. Why the operator of the motorboat ran over a "no ski" buoy: "What buoy?"

7. Why the motorboat operator was exceeding the slow, minimum height swell speed within 100 feet of the shoreline and a drifting boat: "I was going slow, I was at 2200 RPMs."

8. Why the personal watercraft operator was running wide open in an area marked with "no boat" buoys: "There's no boats in my way."

9. Why the motorboat was drifting in the middle of the lake at 11 p.m. with no lights on: "We got a babysitter for the kids and are being romantic."

10. Why the motorboat lights were off at 11:30 p.m.: "I just turned them off to go to the bathroom." Where? In the water?

11. Why the skier was still skiing 45 minutes after legal hours: "But officer, we're practicing safe skiing, there's no other boat traffic now."

12. Why the motorboat was operated at 11 p.m. with no lights (operator had a B.A.C. of .16 percent): "Why are you picking on a veteran on the 4th of July?"

13. Why the motorboat was operated after dark with its bow lights reversed: "How did you notice that?"

14. Why the motorboat was operated at a high rate of speed with passengers riding on the motor cover: "Why aren't you out stopping people doing stupid stuff?"—*William Carey, WCO, Pike County.*

Happy Halloween!

I'm a WCO who serves an urban district. I devote a substantial portion of my autumn schedule to serving arrest warrants issued for "less than cooperative" violators of the Pennsylvania Fish and Boat Code. After being unable to locate one especially elusive individual for more than a year, I obtained information that this subject worked in the south Philadelphia area as a self-employed painter. A phone call verified this lead. Posing as a potential client in need of painting, I arranged to meet the "contractor" for an estimate at an apartment house I claimed to own. Having now cast the freshly baited hook, DWCO John Celley and I anxiously awaited. The wait was short-lived and much to our surprise, the defendant arrived promptly as scheduled. Following formal introductions, the defendant conceded his guilt and wisely opted to pay the full fine and court costs to avoid being taken forthwith. Additionally noteworthy was the date this incident occurred, October 31, Halloween.—*WCO Alan D. Robinson, Delaware County.*

If only

If only you would have stopped to think—you were so sure things would be OK. Why did you agree to go on that late-night swimming feat? There were no lights, everything was closed—you could not see the signs. It was well after midnight, but the water looked so refreshing you just couldn't resist jumping right in.

Did you have a cramp? Did you dive under and hit a stump or rock? Whatever—you simply slipped under the water then and never came back up. No hint of danger—no sounds—you were just gone. Your friends were in shock.

We, the rescue squad, were called—we took our boat out with the grappling hooks—the long poles moved us up and down the water inch by inch as we tried to snag something. Hour after hour, muscles tiring more after each pull, we went back and forth across the small lake now ablaze with flashing red lights of the police, fire and rescue units—the sounds of the electric generators flashing lights on us was deafening and there in front of us were those warning signs.

At last the divers arrived to start their grueling underwater task. They jumped in with their air tanks as we continued to drag—then up came a diver—we just knew in our hearts they had done their job—we rowed over to the surfaced diver and gently helped him place you in our boat and headed back to shore—the silence was intense—we then saw the sun break through the morning haze.

A new day—the ambulance leaves and we pack up our gear and head back to base. Then home to drop in bed. Closing my eyes the tears uncontrollably start to flow as the adrenaline begins to slow down. Your face is right there under my eyelids—I'm not supposed to be affected by this job I was just part of, but regardless, my heart bleeds a little more each day I have a victim. The tears continue to wash away the hurt.

I'll go back tomorrow—tonight even—when I'm called to help drag a river, lake or pond. If only you would have checked it out—signs do mean a lot—warnings are useless if you don't heed them. "Oh well, if only," is so easy to say—but how it breaks the heart so many times.—*Kenny Ferretti, Bureau of Education and Information.*

Sneak attack

Two young Washington County anglers, Robert "B.C." Cowden, 15, and Rick Loar, 11, accompanied Mr. Don Dallatore, Jr., to Marvin Creek in McKean County to learn the fine art of fishing for trout with minnows. A nice trout followed B.C.'s minnow but wouldn't take the bait. Mr. Dallatore said, "The fish probably saw you!" On the next cast, B.C. turned his head so the trout couldn't see him!—*Don Parrish, WCO, McKean County.*

Anglers are great!

During a recent photographic outing for the Pennsylvania Outdoor Writers Association at the delayed-harvest, artificial-lures-only area on Oil Creek, my faith in mankind was restored. Someone left a graphite fly rod, reel, and other tackle leaning against a tree sometime mid-morning on a Friday. The mother of our "model" had left the rod there while she watched the photography session. The next Monday she remembered it. Sure enough, no one had touched it. Anglers are great!—*Robert L. Steiner, WCO, Venango County.*

ANGLERS CURRENTS

Pennsylvania Angler Volume Available

A limited number of bound copies of *Pennsylvania Angler* Volume 59 (January 1990 through December 1990) are available. This volume contains 1990's 12 issues. It is hardbound in black with gold-colored inscription.

Volumes are available on a first-come, first-served basis because quantities are limited. They are available for $22 postpaid for current *Angler* subscribers and $31 postpaid for non-subscribers.

When you place an order, please remember to specify volume 59. If you are a subscriber, include your account number with your order. This number appears directly above your name on the magazine mailing label.

Payment must accompany orders. Make checks payable to Pennsylvania Fish Commission and send orders to: *Angler* Circulation, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Angler's Notebook

by Chris Dolnack

Professional tournament anglers often wear a dampened bandana around their necks to prevent sunburn and to keep cool. A light-colored cap with a mesh back also helps protect your head, face and eyes.

Summertime water sports—fishing and boating—are fun, but the sun can take its toll and leave you fatigued. Be sure to take along plenty of sunscreen and cool, non-alcoholic beverages. A pair of UV-blocking sunglasses helps reduce eye strain.

When the summer doldrums put fish down, consider fishing after nightfall. If you fish from a boat, be sure the navigation lights work and that you have a whistle or airhorn on board.

Use heavier line that normal when fishing topwater lures at night. The fish won't see the line and you won't be able to finesse snags.

Timing is the key to hooking fish on a topwater lure in the dark. Resist the temptation to set the hook when you hear the strike. Wait until you feel the fish.

Attach your lures with a small snap swivel when fishing at night. The clip allows you to change lures without having to tie knots.

When the surface temperature reaches the mid-70s, topwater fishing comes into its own. Clear water adjacent to submerged vegetation is an ideal spot to try.

Creek channels are important mid-summer structure. Fish use the creek channels as highways, traveling them in search of food.

Finding abrupt structure is a key to catching fishing in warm weather. Creek channels, horseshoe bends, sunken islands, submerged bridges and timber probably hold concentrations of gamefish now.

Heat and sunlight weaken nylon fishing line. Line exposed to heat in the trunk of a car, or to sunlight in the window of a pickup truck, is suspect. Change the line if in doubt.

A common way professional anglers check line for abrasion is to run the line lightly between the lips. If the line feels rough, respool.

Putting a trophy fish on a stringer or loose in a cooler risks knocking scales off. To prevent this from happening, dampen a clean towel and wrap the fish in it. Keep the towel moist until you reach the taxidermist.

Wet flies are especially productive when the water begins to clear after a cloudburst.

Small, dark flies produce better than lighter-color flies when streams are low and clear.

illustration- George Lavanish

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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On the Water

with Dave Wolf

"Sunnies"

Russ Gettig

I stirred beneath the glow of the Coleman lanterns that dimly lit the musty-smelling cabin. My grandmother was an early riser and I felt her gentle nudge at the same time I smelled the bacon my grandfather was preparing on the wood-fired cook stove. I stumbled from the old army bunk, its green paint chipped and worn, and struggled out the cabin door to the trough that held the spring water directed by the wooden "V" my grandfather had built. I splashed the icy cold water on my face and was awake immediately. Like most boys, I did not wash thoroughly, even though I knew my grandmother would conduct inspection back inside the cabin.

Grandfather had plans to fish Penns Creek for trout today, meaning that my grandmother and I would walk the mile of dirt road to the lake that held "sunnies." They were broad, heavy panfish, too lowly as a gamefish for my grandfather, but grandmother and I enjoyed the sport immensely. Besides, grandmother was more patient with this six-year-old—more willing to untangle lines and chat as we fished. When we trout fished, talking was not allowed "because it would scare the fish"—the fish that we always ate. Sunnies were different. We caught them only for fun, although we always took a scrub bucket along to collect our catch. We would always bring them back to the cabin to stock into the small pond we had dug near the spring. We did not understand that the water was too cold there and had always been puzzled by their disappearance.

We had gathered the Tonkin cane rods, warped and bent from years of casting splitshot, worms and liver, and the automatic reels loaded with eight-pound-test monofilament line. We would spend the entire day at the lake, placing the bent rods in forked sticks we found in the area.

Then we would sit and wait, our eyes fixed on the tiny white-and-red bobbers that rose and sank with each ripple of the wind-blown lake. My grandmother and I would sit and talk about nothing in particular. We ate a leisurely lunch and I will never forget the hard candy grandmother had stashed in her brown gym bag—candy with a wrapper covered with dirt that was easily brushed away.

I recall the tug on the bobber and my grandmother warning me to be patient and allow the bobber to disappear before setting the hook. I remember the large and brilliantly colored sunnies—slab-sided fish, at least in this youngster's eyes, coming from a lake that received very little fishing pressure.

I recall day's end as well, and the long walk back on the dirt road, often in the dark, and the occasional passing car leaving a plume of dust that gathered mostly in my teeth. To this day, I like the smell and taste of dirt roads. We would take turns carrying the bucket, and I would often stop and see how the fish were surviving the journey. They were fish destined for the spring pond, and I had high hopes of building a population there, right near the cabin, something that would expand my fishing hours.

I would return happy and proud and my grandfather would look at the bucket of sunnies with disdain and ask if we had taken any trout. When we answered no, he would ask if we had tried the small stream that paralleled the dirt road, a stream we all knew held a good head of native brookies. Of course we had not. We had spent the day fishing for sunnies. My grandfather never appreciated the colorful creatures, or the lake that produced so few large trout. He never understood our passion for the fish or the place, and I'm not quite sure he understood or appreciated the quality time my grandmother and I spent there.

The questioning complete, grandfather would show us his impressive catch of browns from Penns Creek—fish that would be filleted and eaten that evening within the confines of the cabin. Fish that were simply that to a six-year-old—fish, no more or no less important than the sunnies finning in the cold spring pond behind the cabin.

Back on the army cot listening to the soothing song of the whippoorwill, I never considered my grandparents passing, or the inherited love of the sunny my grandmother would pass on. And now sunnies and still ponds still attract me, and bring memories from the closet of my mind. The memories that have been, and always will be, safeguarded for those lakes and ponds and the dirt roads that led me to them. These memories allow me never to fish for sunnies alone, for I still remember the patience and the kindness of a grandmother who led me to the still waters and those brilliant fish. They are much like the pot of gold at rainbow's end.

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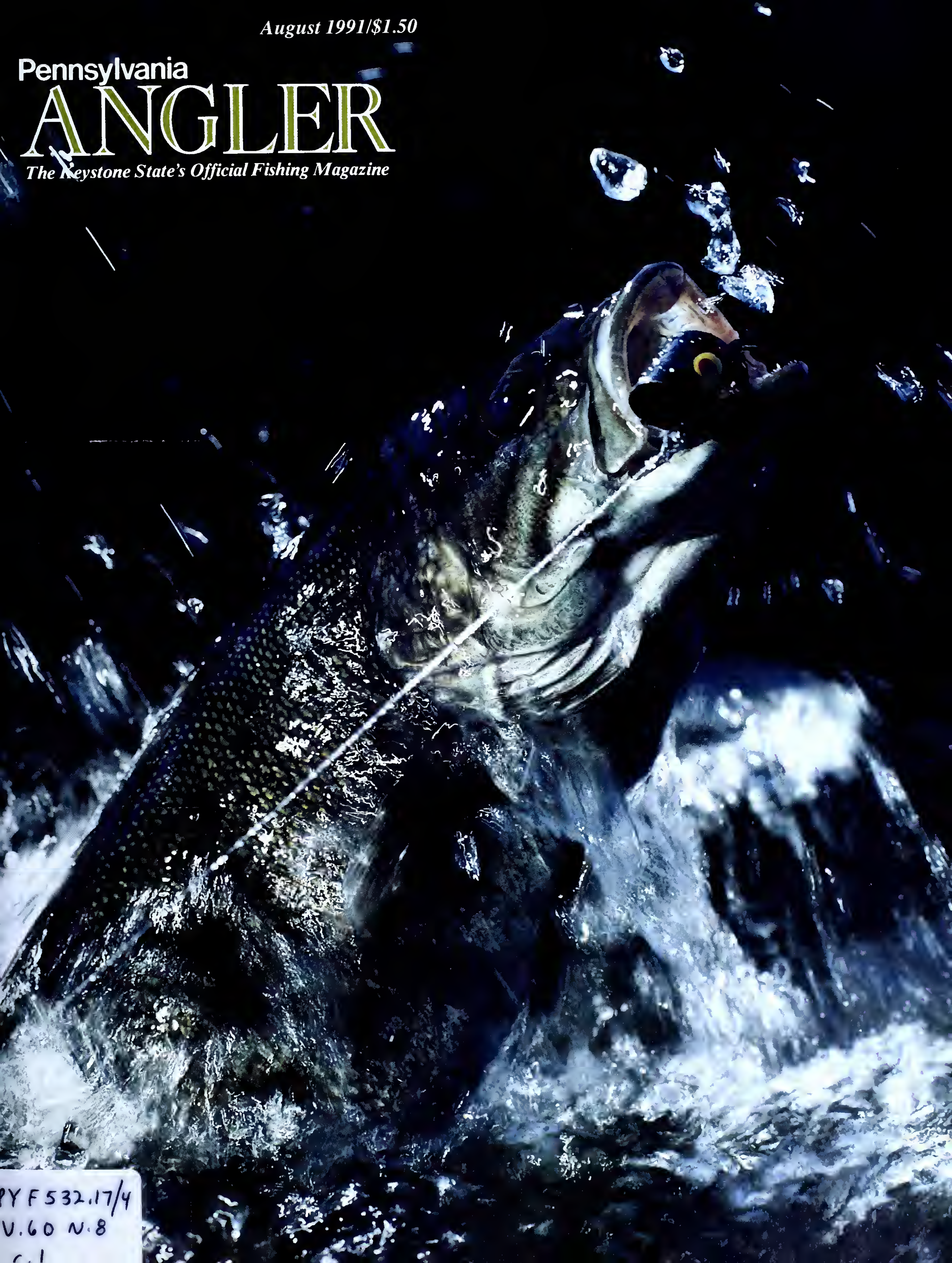

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Straight Talk

Coastal Habitats: National Treasures at Risk

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

Just as inland wetlands are valuable to maintaining aquatic habitat, coastal wetlands serve a vital function in sustaining marine habitats. The nation's coastal habitat for marine fishes extends from the continental shelf to hundreds of miles inland and includes coastal rivers, bays, wetlands, seagrass meadows, and in southern regions, mangrove forests and coral reefs. Different species of marine fish depend on different habitats at different stages of their development and adult life.

Effective management of coastal habitat has long been recognized by fisheries managers as a critical element if this nation is to maximize social and economic benefits from our offshore fisheries.

The continued loss of marine fishery habitat has emerged as the greatest long-term threat to the viability of our marine fisheries. For example, it is estimated that 75 percent of the U.S. marine fish catch is species that depend on habitat found only in coastal wetlands, and the National Marine Fisheries Service has determined that the U.S. fishing industry has suffered annual losses exceeding $200 million during the past decade. In the southeast, where coastal habitat losses have been most severe, there has been a 42 percent decline in commercial fish and shellfish landings in the past eight years. Nationwide, populations of most of the estuarine-dependent species that are consumed by people are at record low levels.

In addition to their life-sustaining role to the nation, marine fisheries coastal habitats also perform social and economic functions for our human population. These habitats maintain nearshore water quality, control shoreline erosion, and provide vast economic opportunities for fishermen, hunters, boaters and outdoor enthusiasts.

Although there is a vast array of regulatory, management and fiscal policies in place to conserve these habitats, human activities continue to threaten and destroy their natural functions at an alarming rate. Population growth in coastal areas is four times the national rate, and chemical and nutrient pollution, freshwater diversions, the existence of dams blocking anadromous fish migrations, dumping trash, and other human activities continue their destructive effects.

Pennsylvania has limited marine habitat, primarily in the Delaware, Susquehanna and Schuylkill river basins, but every Pennsylvanian needs to join with other citizens to encourage adoption and implementation of a clear and effective national habitat conservation policy. The future of our marine environment is seriously at risk, and Congress and the Bush administration must assign a high national priority to protecting these invaluable national treasures.

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The cover

This issue's front cover, photographed by Doug Stamm, shows a smallmouth bass that nailed a popper. If you'd like to enjoy similar action, see pages 10 and 15. If you're a trout fisherman and the challenge of catching trout in August lures you, see page 23. All trout fishermen will want to scan the information on page 26. This issue's Commission 125th anniversary article on page 4 is a look at what happens when a few visionaries make their dream come true.

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DOCUMENTS SECTION

As Time Goes By: The Benner Spring Fish Research Station

1866-1991

125 years

by Vincent A. Mudrak

Throughout the summer and fall of 1950, a few visionary people got together and decided to develop a tract of land. These people were not of the tar-and-cement vintage. They did not want to see parking lots and highrises. Instead, they envisioned a physically humble but technologically progressive structure located along the grassy meadows that bordered Spring Creek in Centre County. After several months of exploration, their ideas coalesced, and a plan was "born" that included the development of the Benner Spring Fish Research Station.

In the winter of 1951, the Fish Commission announced that it received permission to use one of the largest limestone springs in the state, plus over three miles of Spring Creek, through an agreement with the state correctional institution at Rockview. Under a long-term lease agreement, the Fish Commission acquired the major portion of the water from Benner Spring, plus 41 acres of property, including a 13-acre meadow (where the Benner Spring Fish Research Station currently stands). The agency's Executive Director, Charles A. French, announced that the adjacent reach of Spring Creek would be used as a testing area for stream management techniques, and the 13-acre meadow would be developed into ponds and facilities where feeding, breeding and disease studies of cultured fishes would be conducted by research biologists. Mr. French concluded that the location of the research site benefited the Fish Commission because it is in the geographic center of the state.

On May 2, 1952, Executive Director French formally "broke ground," and thus began the Benner Spring Project. During its humble beginnings, and before any building was constructed, an aerator was built for the water supply, and a work area was contained in a small tent. This permitted biologists to explore the potential of the water supply, to ensure that it would be conducive to its eventual task of providing the water source for a full-blown genetics approach to enhancing trout production in Pennsylvania.

Once the spring water supply was proven to be suitable, a temporary hatch house was constructed using an army hospital tent. Over the next four years a lot of work was accomplished in the form of bridges, pipelines, a diversion dam and the main building structure. Consistent with the philosophy of the Commission, fish hatchery personnel pitched in and performed a lot of the physical construction work.

The Benner Spring Fish Research Station officially opened in 1957. It was considered a new beginning for research biologists, and a place where promising techniques relating to both fish management and fish culture could be tried. Earthen raceways were reserved for experimentation, and small concrete ponds were used to maintain selected strains of trout. Research biologists worked with fish production personnel to explore opportunities and answer perplexing questions.

This was a time when fish culture was purely an art (rather than a science) and lots of things that we take for granted today were only a conceptual strategy. For example, today's standard "dry" diets were only attempted on a trial basis in the 1950s. Although problems like winter freezing and summertime smell and flies were a nuisance, it was more common to see fish culturists feeding ground fish and/or liver than feeding fish pellets. Human nature what it is, "dry" pelleted diets were not "standard fare" until some trials were accomplished, which "weeded out" the many inadequate diet formulations. Much of what we see today at our fish culture stations is a similar story—many procedures are products of Benner Spring's testing of the past.

Before discussing some highlighted research projects that have been conducted by the Fish Commission staff at Benner Spring, let's define a few terms to eliminate confusion about the meaning of "research." What is "research"? What is "basic research"? What is "applied research"?

Webster's definition of "research" is "the careful, patient, systematic, diligent inquiry or examination in some field of knowledge, undertaken to establish facts." As applied to the fisheries field, this means the search for new facts concerning fishes and their environments, plus investigations of other extrinsic factors like human populations and fish culture methodologies that relate to a fisheries program.

Additionally, basic research is the quest for new knowledge for its own sake, like studying the solar system. Applied research involves seeking a solution to a problem, or making a product, such as the development of the therapeutic pharmaceutical agent to control a disease. This usually entails the application of existing knowledge or methods in new ways, in an attempt to improve the cost effectiveness or results of some operation.

By far the majority of the investigative work conducted by the Fish Commission deals with applied research. But remember that some of the greatest technological advances of recent years have resulted from basic research projects (such as products like teflon from our space-age quest for knowledge). Because the Fish

Commission's budget is limited, our work focuses on applied research that gives results within a reasonable time. Much of the research would more normally be called "technical guidance" or "quality control."

Over the years many experiments were conducted on fish and fish management approaches. Here are some of the most memorable contributions to the fisheries field.

Fish egg fungicide study

The Fish Commission conducted research to determine which chemicals would be effective for the treatment of fungus disease in fish or fish eggs. The results of this work revolutionized the fish culture field with the development of the use of formalin to treat saprolegnia (a fungus that can devastate incubating fish eggs).

Vertical culture of fish

Through a series of experiments with jar culture and barrel culture of fish, Commission researchers showed that fish could be reared in vertically oriented culture units. This led to the development of large silos for the effective production of fish in those areas where terrain and stream gradient are conducive to this form of aquaculture.

Selective breeding of trout

Using the local resources of The Pennsylvania State University and consulting geneticist Dr. James Wright, the Fish Commission experimented with trout breeding procedures to develop stocked trout for sportsmen, at a reduced cost, that would be larger, better colored and more vigorous. Various color patterns were determined to be heritable traits, and some of these (such as the golden/palomino) were maintained for production purposes.

Esocid culture

Under the direction of Keen Buss, and with the cooperation of hatchery staff, the Fish Commission pioneered the advancement of coolwater fish culture, which permitted the fish of the pike family (Esocid) to be cultured intensively. Furthermore, genetic work that included species identification and hybridization was the focus of attention for many years.

Tetracycline marks on otoliths

Research staff refined a technique whereby biologists could view a section of an otolith (similar to our small ear bones) of a fish, and observe daily growth rings (similar to yearly rings of a tree). Using a prescribed bath treatment, biologists were able to "tag" fish physiologically whereby tetracycline was attached to the calcium of the daily ring. Moreover, UV fluorescent microscopy permitted researchers to discriminate among multiple tags, and to use this information to evaluate stocking protocols and the relative value of the stocking efforts.

A to Z accomplishments

Although too extensive to delineate, an A to Z shopping list of Benner Spring accomplishments to date includes the following:

a. Evaluation of tagging methods to mark fish.
b. Reproduction of Centrarchids (sunfish and bass).
c. Evaluation of experimental electrofishing gear.
d. Competition among three species of trout.
e. Trout fingerling and fry survival studies.
f. Studies of Lake Erie commercial and sport fisheries.
g. Lake Erie sea lamprey investigations.
h. Investigations of lake trout in Harvey's Lake.
i. Fish-for-fun experiments.
j. Evaluation of hatchery processes.
k. Development of disease-resistant strains of fish.
l. Development and evaluation of dry diets for trout.
m. Collaborative studies to develop dry diets for coolwater fish.
n. Trout species hybridization and characterization.
o. Collaborative work with Commission engineering staff to design fish hatcheries.
p. Work with hatcheries to implement cost effective operational strategies and labor-saving devices.
q. Design and evaluation of wastewater treatment systems for fish hatcheries.
r. Collaboration with environmental agencies to establish NPDES criteria for fish culture operations.
s. Age and growth determination of fishes using meristics.
t. Otolith microstructure evaluations.
u. American shad investigative efforts.
v. Evaluation of time and size of release of Lake Erie Salmonids.
w. Assessment of grass carp for Pennsylvania's climate.
x. Implementation of an angler log (diary) for Lake Erie waters.
y. Lake Erie Task Group accomplishments.
z. Development and coordination of a fish transfer and disease control policy.

Getting back to the historical perspective, in 1976 the Benner Spring complex underwent a planned renovation that included new facilities for the intensive culture of coolwater fishes, a change from earthen ponds to modern concrete raceways and enlargement of the research building. Laboratories were revitalized to facilitate certification for water quality testing, a diet development area for coolwater fish, a brood stock development area for Salmonids, and a multi-use wet lab area to coordinate work with the Fish Commission's engineering and technical personnel.

As facilities were constructed and staffed, the thrust of the work continued to focus on regimented studies designed to enhance continuing operations within the Fish Commission.

Fish Culture Research Unit

Today the station's functional research integrity is maintained by biologists specialized in specific areas of expertise. Thomas Bender is in charge of the Fish Culture Research Unit. Mr. Bender's job is to evaluate fish culture issues and solve problems through deductive logic. As a member of a multi-state consortium, Mr. Bender coordinates Esocid and walleye culture initiatives with our Warmwater Production Division.

Joseph O'Grodnick serves as our brood stock development researcher for Pennsylvania. He assists both coolwater production and warmwater production in their efforts to ensure that quality fish are reared for eventual harvest by Pennsylvania anglers.

Recent initiatives include the characterization of our returning coho salmon from Lake Erie, and pair spawning individual males and females in an attempt to isolate the best quality progeny (fish with "all the right stuff").

Mr. O'Grodnick continues to work with the individual hatchery managers within our trout production system, and he has facilitated the development of a brood stock evaluation apparatus that permits hatchery staff to select and maintain the best quality brood stock for production facilities.

Mr. Kenneth Stark is our fish health specialist who investigates fish disorders from both wild stocks of fish and hatchery fish. Mr. Stark spends much time answering questions from anglers who happen to catch fish with some unusual manifestation. For example, "what is this strange growth," and "what are these yellow spots on my fish?"

Mr. Stark is involved in the isolation of infectious agents from diseases that break out in a hatchery. Using a "Sherlock Holmes" approach, Mr. Stark tries to identify the specific cause of the disease. Then he makes an appropriate treatment recommendation.

Similarly, he implements a fish disease classification protocol for each hatchery. This establishes guidelines for the transfer of fish between hatcheries within the Commonwealth, and it also provides an evaluation process for out-of-state imports and exports.

Water Quality Unit

Mr. David Truesdale is in charge of the Water Quality Unit. Much of his work falls under compliance mandates of the various permits that we now have at each of our fish culture stations. The Commission is concerned with the wastes that are generated at our fish culture stations and we must ensure that environmental intrusions are not encountered. Similarly, we must ensure that our public drinking water supplies at hatcheries and visitor centers meet criteria established by the Clean Drinking Water Act.

The Water Quality Unit is also served by Fisheries Technician Earl Myers, who evaluates water treatment processes that may lead to improved hatchery operations and a healthier population of fish. In a nutshell, the unit provides laboratory services that deal with many issues of environmental concern.

Van Dyke Station

The Division of Research also has administrative purview over the operations of the Van Dyke Research Station for Anadromous Fishes (Juniata County) and the Lake Erie Research Unit (Erie County). Under the direction of biologist Michael Hendricks, the Van Dyke Station has continued to make progressive strides toward the enhancement of anadromous fish restoration for the Susquehanna River basin.

The Fish Commission's work with American shad serves as a guidepost for other researchers. Recent work has demonstrated that the Fish Commission's contribution of stocked American shad is indeed working, with the result that most of the Susquehanna River's outmigrating and returning American shad are from our operations.

Lake Erie Research Unit

The Lake Erie Research Unit is led by biologist Roger Kenyon with the support of research vessel Captain Paul Atkinson and biologist Robert Lorantas. The unit has made a strong commitment to ensuring that the Fish Commission will comply with Lake Erie mandates under the Strategic Great Lakes Fisheries Management Plan. The unit's efforts are integrated within several federally funded research programs, and include work with coho salmon, steelhead, forage species, yellow perch, walleye stocks, lake trout, sea lamprey assessment and treatment, plus angler use-and-harvest initiatives. The goal of the work is to ensure a stabilized fishery, consistent with the interests of both commercial and sport fishermen.

Those of you wishing to come and visit us at Benner Spring are in for a treat. Besides a research facility, the complex also houses a complete fish culture station under the supervision of hatchery manager William Kennedy and assistant manager Walter Bair. The culture station employs nine fish culturists, one maintenance repairman and a secretary. Their assignment includes rearing approximately 650,000 adult brook, brown and rainbow trout, and almost a half-million "fingerling" trout for transfer to cooperative sportsmen-funded nurseries. Additionally, several species of coolwater fish are reared and may be observed in ponds or intensive culture raceways during June through September.

If you happen to be in the Centre County region and would like to take a personal look at what we do and how we do it, you are cordially invited to visit us at Benner Spring. The building and offices are open Monday through Friday 8:00 a.m. to 4:00 p.m. The outside complex is open every day of the week 8:00 a.m. to 4:30 p.m.

For information, call (814) 355-4837. Although the staff members are biased, they believe there is no better secretarial team.

As the saying goes, "There is nothing new under the sun, and so it shall be that 20 years from now someone else will be looking back in retrospect, wondering about how things must have been in the "old antiquated system." We all understand that no technology should be cherished to the point where psychological blinders instill tunnel vision and we reject change. A great idea today may be blase' tomorrow, and passe' next year. If we focus on what counts—the quality work ethic, the clear objectives, the concern for people, the dedication to do what is right—then we can proceed with an open mind and the results will be good, for anglers and conservationists today and tomorrow.

Vincent A. Mudrak is Chief of the Commission Division of Research.

THE BENNER SPRING FISH RESEARCH STATION

photos by Karl Lutz

In 1950, a few visionary Commission employees imagined a physically humble but technologically progressive structure along the grassy meadows that border Spring Creek in Centre County. And the Benner Spring Research Station was born.

Cutting Wood, Sinking Spikes, Laughing and Talking

by Cheryl Kimerline Hornung

What do you think of when someone mentions northern Dauphin County? Some of the best smallmouth bass fishing? How about a youth conservation club—some of the best young anglers and boaters in the state?

WCO Barry Mechling certainly thinks that way. Mechling works with four youth groups throughout the year. These groups volunteer at least one week a year to work on various boating, fishing and stream improvement projects. These teenagers even show up on holidays and weekends to assist with other Fish Commission projects.

The teenagers complete a Boating and Water Safety Awareness Course so that they can safely float stock trout in the spring and work around the water. Most of these teens live near water and spend most of their lives on, in and around it. Boating and fishing are almost second nature to them.

However, the boating and water safety awareness program is a good hands-on learning course for all. Even the teachers put in their water time. The students learn safety tips such as how to float in hip waders, how to rescue a person from the water, what to do if your boat capsizes, and the Pennsylvania laws regarding safety equipment and boat operation.

These Dauphin County teens represent our future. They are learning the concepts of courtesy and teamwork by working together on these waterway projects.

Most of their volunteer time is in the spring and fall when the water can be bitterly cold. The training includes thorough discussions on outdoor survival, clothing considerations and survival in cold water.

Upper Dauphin, Halifax and Millersburg school districts along with the Dauphin County Junior Conservation Camp provide over 300 teenagers to assist WCO Mechling on special projects. Millersburg High School teachers Bill Baker and Ken Rudy are in their fifth year of working with Mechling. According to Baker, "it just seems like a natural thing for a biology and shop teacher to do."

Halifax High School has been involved in the program for 15 years. The Halifax teachers are Bill Moore and Mark Lasser. Upper Dauphin High School teachers Bill Kinch, Dave Savage and George Lasser have been with the program for the past three years. The Dauphin County Federation of Sportsmen's Clubs also provides unending support throughout the year in working with these teenagers.

These schools have a rotating "conservation club of the year" award sponsored by the Dauphin County Federation of Sportsmen's Clubs. Competitions for this award include stream improvement and stocking trout. Boating safety races were added last spring.

One of the projects the schools worked on last year opened this spring "ready for business"—a children and special population fishing area on Powell's Creek. The wood shop at Upper Dauphin High School will make the sign. The students have spent much time putting in channel blocks and jack dams for stream improvement. There is now a 10-foot-deep fishing hole at the base of the handicapped ramp. The Blue Mountain Safari Club donated $7,500 and three landowners donated their land. These landowners have agreed to keep this area open to public fishing for the next 10 years.

WCO Mechling says, "It's amazing what can get done with 300 people—especially kids!"

As I talked with Mechling, the busy background was full of teenagers working on a stream improvement project by rolling large rocks along the edge of the stream. The rocks were the base and smaller stones were packed in on the top. The students cut wood for stream deflectors and they pounded in spikes to hold these in place. Everyone was busy. Noises were loud as orders were shouted over the rippling of the creek, buzz of the chainsaw, and laughing, talking teenagers.

Cheryl Kimerline Hornung

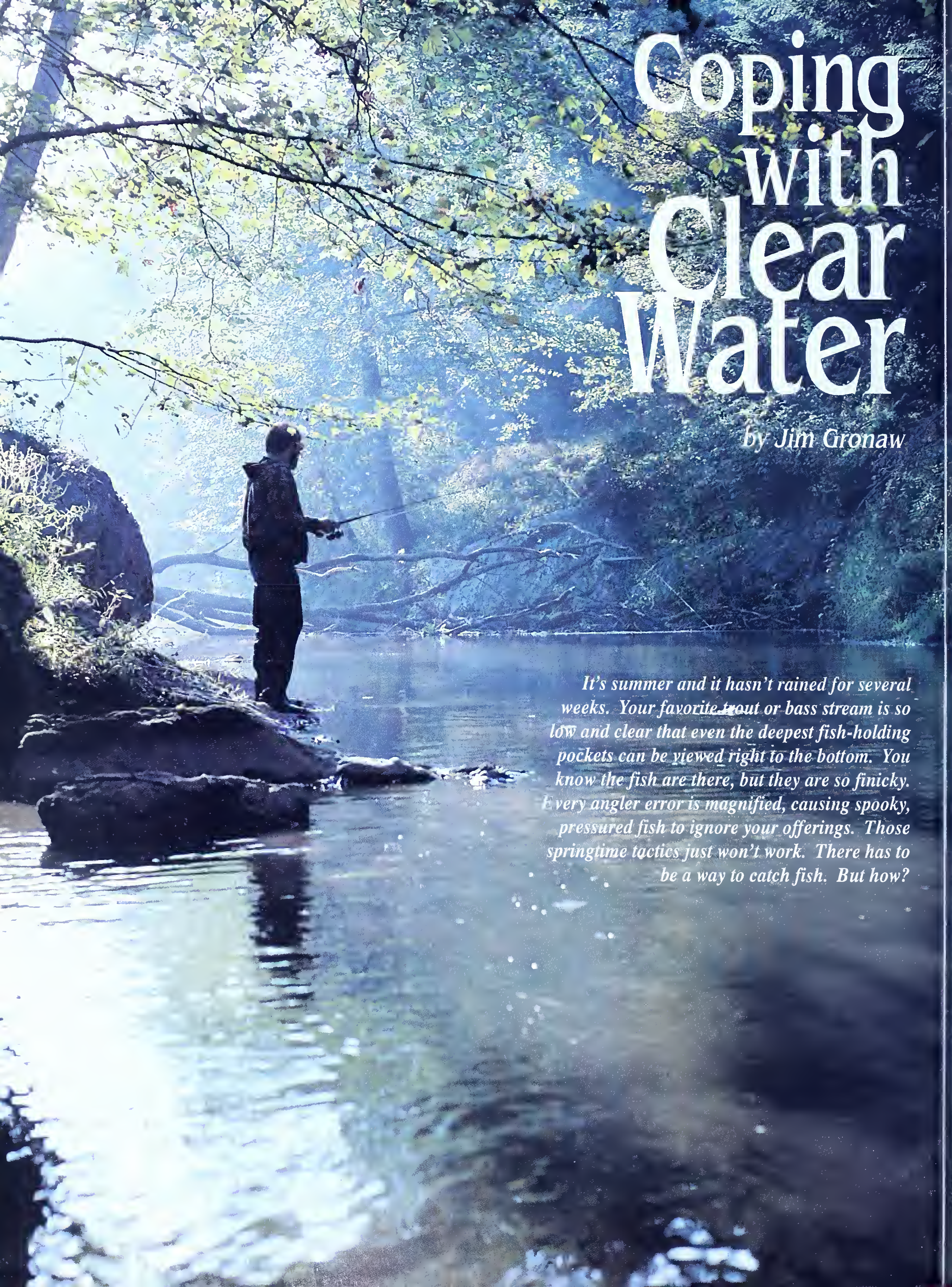
These students stock over 100,000 trout in the spring either by boat float-stocking or hand float-stocking. Millersburg High School students float stock more than 60,000 trout themselves in Wiconisco Creek.

We all hear the same complaints—"litter bugs," "rude behavior," and "lawbreakers." Unethical behavior on and along our waterways jeopardizes lives and the future of all water-related activities. When you have busy waterways, any mistake or abuse of the resource affects someone or something else. Common courtesy and ethical behavior are musts. If everyone used common sense when boating and fishing, many regulations would not be necessary.

These teens from Dauphin County are representing our future. They are interested in learning more about their favorite pastimes. They are learning the concepts of courtesy and teamwork by working together on these projects. They want to have fun fishing and boating and at the same time be concerned about safety and the resource.

These youths ought to be commended for their actions. Let's hope that more schools and clubs begin to take an active interest in protecting lives and resources for our future.

Upper Dauphin, Halifax and Millersburg school districts and the Dauphin County Junior Conservation Camp provide more than 300 teenagers to assist WCO Mechling on special projects. Teachers and conservation club volunteers provide continuous support throughout the year.



Coping with Clear Water

by Jim Gronaw

It's summer and it hasn't rained for several weeks. Your favorite trout or bass stream is so low and clear that even the deepest fish-holding pockets can be viewed right to the bottom. You know the fish are there, but they are so finicky. Every angler error is magnified, causing spooky, pressured fish to ignore your offerings. Those springtime tactics just won't work. There has to be a way to catch fish. But how?

Let's face it, everybody has encountered conditions where the water clarity was the major factor in determining the feeding patterns of gamefish. More often than we care to admit, ultra-clear water has led us to failure and frustration rather than success. Developing consistent patterns to catch fish under these circumstances is indeed challenging. But there are tactics that can cure those thin-water woes. You can often use a combination of strategies for maximum success, depending on the conditions you encounter.

Camouflage

All too often anglers forget that when they hit their favorite bass or trout stream, they are entering the realm of the fish, and the fish are far more aware of any abnormal occurrence than the fishermen. For that reason, clothing is grossly overlooked by many anglers. Sure, that light-blue turtleneck looks nice under your vest, and that khaki roll hat looks sharp, too. But to a spooky smallmouth bass or wily brown trout, you may as well wave a white flag to surrender.

It may initially seem like overkill, but wearing camo clothing does put thin-water odds in your favor. You can get closer to fish-holding water and stay longer without spooking fish. Wear camo hats, shirts and waders. Remember, you're not trying to make a fashion statement here. In ultra-clear conditions you need every advantage you can get, and getting within casting range is the first critical step for success. Blend, don't clash, with your surroundings.

Lines and rods

The line you use may be enough to put the fish down and thus becomes the most important link between you and the fish. In shallow, clear water, fish can view your offerings with critical inspection. They see every flaw. In many situations, fish follow lures for a distance and then turn away just when you expect a smashing strike. Obviously, they detected something wrong.

When you fish clear water, use lines that are clear, or classified as low-visibility lines. To conceal it further, take a green or brown permanent marking pen and color the line at foot-long intervals, starting at the knotted lure, and run it several feet up to the rod tip. This trick, first used by big-bass expert Doug Hannon, breaks up the continuous bright line that may reflect sunlight within view of a charging fish. This results in more strikes from followers.

Also, use the lightest line that conditions allow. If you're fishing an especially rocky area, you may opt for six- or eight-pound low-visibility mono. If there are fewer underwater hazards, four-pound line may be the ticket. Additionally, stick with quality line. Cheap, cut-rate lines only cause problems and good monofilament is money well-spent.

Sometimes you need longer casts to help solve the clear-water puzzle. Several companies now make 6 1/2- to 7 1/2-foot light and ultralight spinning rods that can easily handle four- to eight-pound lines and increase casting distance by 15 to 20 percent. Light-action walleye and crappie rods can help you keep your distance and reach those spooky critters.

Go natural

There are times when it seems as if you are doing everything right, but the fish just need a little extra "something" to turn them on. You can see them at a distance and they show interest in your lures, but they just won't commit to striking. At times like these, live, natural baits may be the answer.

Last September, an angling friend and I fished an Adams County smallmouth stream that was low and super-clear. We were frustrated by the constant sighting of two- and three-pound smallmouths that darted for cover, spooked by their customarily cautious approach. The fish were especially skittish and non-receptive to our crankbaits and jigs.

We made plans for a live bait foray to the same water. Armed with minnows, crayfish and nightcrawlers, a return trip resulted in our catching and releasing 31 smallmouths, including several two-pounders. Although not a sensational catch, it was a vast improvement over the previous trip's frustration. In that clear creek, live baits definitely improved our take, and subsequent trips with the real McCoy proved successful.

Besides these baits, other standards include grasshoppers, crickets, mealworms, waxworms and the reliable garden worms, which are available to all of us for the digging. Fished on barbless size 4 or 6 hooks with little or no weight, the "real thing" can cause selective gamefish to lose their caution and feed aggressively. Of course, barbless hooks let you release more fish unharmed.

Go deeper

Gamefish often seek the sanctuary of deeper water whenever their environment is threatened. They may be feeding in shallow water and within sight of the angler, but when spooked their initial response is usually to seek the confines of deeper, more sheltered water.

Keep in mind that the term "deep" is relative to the waterway you are fishing. In sparkling brook trout trickles, two or three feet may be the deepest holding water present. Some bass and trout streams might have four- or five-foot holes. Larger creeks may have eight- to 10-foot pockets. Deep water varies from stream to stream and it pays to know where the deepest, most favorable pockets are.

The sanctuary of deeper water is often characterized by other structural elements such as undercut banks, tree root systems, fallen logs or sizable rock strata and ledges. Slower current is another favorable aspect of the depths.

All these combinations usually add up to the feeding and holding lies of larger, individual gamefish, which is exactly what you want. Using live bait is particularly effective on isolated, deeper pockets. And don't be afraid to explore even the smallest undercuts or cubbyholes. Any spot that is noticeably deeper than the majority of the stream is worth investigation.

Go at night

If all else fails, try fishing during dusk, dawn or even at night. The major requirement here is knowing your water and avoiding any hazards or trouble spots along the way. By getting the feel during the day, you can take on the exciting challenge of the night bite.

If possible, start the fishing on moonlit nights when some light is available. These are not necessarily the best nights to fish, but they make it easier for you to see and get around. Using surface lures can also make your fishing much easier at first. Then you can graduate to the use of live bait, jigs, spinners or plugs.

Gamefish lose much of their caution at night or during low-light periods. Things can be pretty exciting, especially if surface feeding occurs. Do yourself a favor and carry a small pen-style flashlight for tying on lures or unhooking fish. It pays also to do your initial nighttime forays with a friend for obvious safety reasons.

Don't let the combination of clear water and skittish fish keep you off the streams. By blending in and working hard you can put thin-water conditions in your favor.

Fun with a 14-Footer and 9.9 Kicker

by Art Michaels

You wouldn't call it "going where no man has gone before," and it certainly isn't "a five-year mission to seek out new life." But exploring waterways in a small boat like a 14-footer with a 9.9-horsepower outboard can be exciting and refreshing. In addition to fishing fun, you anticipate making pleasant discoveries and you're ready for surprises.

I began reluctantly to explore waterways during fishing trips. These expeditions were last-ditch attempts to save the day. I'd put away my fishing rods and tackle and break out the binoculars, camera, hydrographic maps and U. S. Geological Survey maps to find new spots at the waterways I frequent.

I realized that roaming certain waterways was special for several reasons. Rowing great distances wasn't fun, and exploring large waterways with only an electric motor-powered boat wasn't practical. In addition, missing from some of these waters were larger, louder higher-horsepower boats. Thus, the 9.9-horsepower motor was the perfect balance between too little power and too much power. And on many waterways 10 horsepower is the maximum allowed, so it's the best—and only—way to explore these great expanses.

One of these ventures evolved from a shad fishing trip on the Delaware River in Northampton County. I had actually done well during a few hours of morning action—I caught and released eight shad, four of which were big-bellied roes. The fishing slowed, and instead of packing up and going home, I fired up the outboard and motored slowly upriver to find likely-looking shad spots, smallmouth bass haunts and musky lairs.

As I approached a bridge, I saw an osprey hovering over the water, but I lost sight of it a few times against the background of the shoreline trees. I cut the engine and as quietly as I could I dropped the anchor to hold my position in the current. Between close-up glances through my binoculars I unwrapped a sandwich and popped open a can of soda.

The huge osprey had a similar idea. The dark, Stealth bomber-like form plunged straight into the river, its wings swept inward and back. The bird's hitting the water sounded as if someone had thrown a refrigerator off the nearby bridge. For a moment I couldn't see the osprey through the splash. Then it took off, following the shoreline on a low trajectory. Water sprayed off its flapping wings, and it rose from the river as a fully loaded 747 lifts off a runway. For an instant it banked toward me, and in its beak I saw a silvery writhing fish—probably a herring, I thought.

I remained for a while to finish my lunch, and I studied the shorelines trees and tried to locate the osprey's perch. I marveled at the bird's sharp eyesight, great strength and effortless coordination.

On a similar adventure to the Conowingo Pool, I anticipated the freshness of discovery as if I were first to explore another planet. The smallmouth bass action was slow, so I decided to explore. I had launched my boat at the Commission's Muddy Creek Access, York County. I motored south from a spot near the access to Muddy Creek.

The waterway's beauty and "fishiness" compelled me to move as far upstream as I could. The creek narrowed and the banks grew taller. I shut off the engine and rowed. The woods and boulders encroached on the stream more and more, making the waterway eerier and eerier. Mist hung in the shoreline trees. I pressed farther upstream and listened to the symphony of birdsong that announced my intrusion into this unearthly place.

I promised then to return soon to Muddy Creek fully armed for smallmouth bass fishing.

Another fishing trip became a sightseeing trek. My eight-year-old son and I were fishing the Susquehanna River from the Commission's Goldsboro Access, York County. When we tired of fishing, he asked if we could see Three Mile Island (TMI) up close. I knew we couldn't circle the island completely, but the idea of looking at the plant up close also appealed to me. In a flash we put away the fishing tackle and motored toward TMI's cooling towers.

The concrete hulks grew larger as we approached the island's northwest side. Slowly we cruised south along TMI's west shore, and my son and I explored the nuclear plant through binoculars.

While watching the depthsounder, just about halfway between the sets of cooling towers I noticed a dip in the bottom contour. Later I learned that when TMI was built, engineers dug a trench from the island into the river—a safety precaution if river levels became critically low. I discovered that this trench is a terrific nighttime catfishing hotspot, and this place is now also on my list of future fishing jaunts.

If I hadn't made that sightseeing effort with my son, I would never have discovered this hotspot.

Sometimes I take trips more to explore than to fish. I've enjoyed Blue Marsh Lake,

Berks County, this way for years. Just as an English muffin has nooks and crannies, so does this waterway have creek arms, inlets and coves to explore—nooks and crannies in which to drop a line.

I've discovered some productive fishing spots this way, and I've returned to these places with my family for day-long fun and more exploring. I've scouted other waterways the same way, some restricted to 10 horsepower, some limited only to electric motors, others with different regulations—Beltzville Lake, Nockamixon Lake, Pinchot Lake, Rose Valley Lake, Presque Isle Bay, scores of miles of the Susquehanna and Juniata rivers and more.

This summer I'm branching out. I bring fishing tackle because the action might be good, but luring me as much as the fishing is the anticipation and delight of discovery. You'd think that exploring can get complicated and that it requires more gear and a larger boat. It can be more involved, and there's plenty of pleasant cruising and exploring you can do in a runabout or in a larger boat. But exploring is also fun—and special—in a small boat with a low-horsepower engine.

Pennsylvania's 10-Horsepower-Maximum Waterways

State Park Lakes

Codorus State Park (Lake Marburg), York County, 1,275 acres.
Maurice K. Goddard State Park (Lake Wilhelm), Mercer County, 1,680 acres.
Moraine State Park (Lake Arthur), Butler County, 3,225 acres.
Nockamixon State Park (Lake Nockamixon), Bucks County, 1,450 acres.
Prince Gallitzin State Park (Glendale Lake), Cambria County, 1,640 acres.
Yellow Creek State Park (Yellow Creek Lake), Indiana County, 720 acres.

U.S. Army Corps of Engineers

Mahoning Creek Lake, Armstrong County, 280 acres.
Francis E. Walter Dam, Carbon County, 90 acres.
Woodcock Creek Lake, Crawford County, 500 acres.
Prompton Dam, Wayne County, 280 acres.

Others

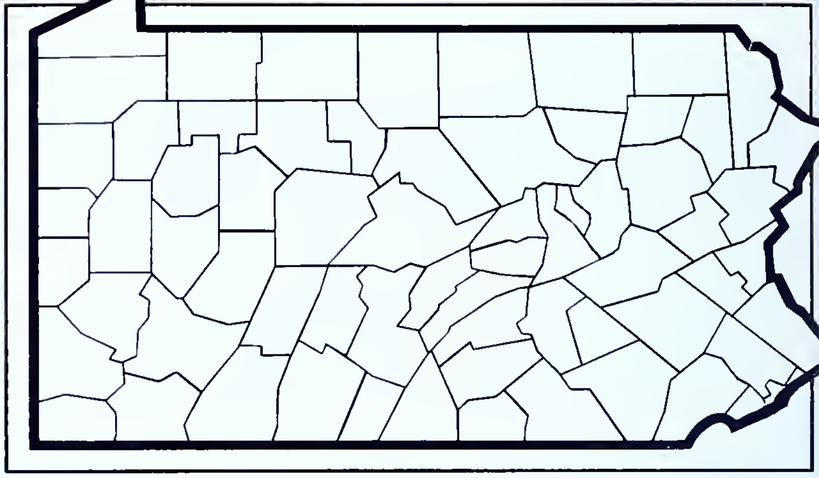
Keystone Lake, Armstrong County, 1,000 acres.
Pymatuning Reservoir, Crawford County, 13,500 acres.
Canadohta Lake, Crawford County, 169 acres.
Fannettsburg Dam, Franklin County, 35 acres.
Cross Creek Lake, Washington County, 258 acres.

Art Michaels

You'd think that exploring can get complicated and that it requires a large boat. It can be more involved, but exploring is also fun—and special—in a small boat with a low-horsepower outboard.

KIDS PAGE!

by Steve Ulsh



River Towns

Harrisburg, Sunbury, Sayre, Philadelphia, Pittsburgh, Easton, Mifflintown and Columbia all have something in common. Can you guess what it is? If you said, "They're river towns," you're right. Pennsylvania has hundreds of them. Some are fairly new in the state's history. Others were started hundreds of years ago by native Americans. Some names are taken from the language of the tribes that were there when the first white settlers came. Nanticoke, Tunkhannock and Kittanning are three examples.

The native Americans chose their villages for several reasons. One reason was for protection from their enemies. A high hill made a perfect lookout. Fertile soil along a river bend was another. Yearly high waters often deposited soil that made river bottomlands good places for growing crops. Other villages were located on productive fishing grounds, especially where suckers and shad gathered in large schools.

Rivers and streams were important to the early settlers when they started towns. Philadelphia was selected because it was a good place to dock ships. It became the main port for settlers coming to the new world—especially to Pennsylvania.

Most of the early settlers were farmers. Many times a mill was started using water power to grind grain. A store usually followed, then a church. Then a school, more houses and businesses until a small town formed. In other cases, area residents made a ferry crossing to help move settlers farther into Pennsylvania, and that led to a town being started. Harrisburg, the state capitol, began this way.

When Pennsylvania's industrial revolution began in the middle 1800s, river towns grew even larger. Making steel, paper and other goods needed water for production and transportation of goods needed by a growing America. A huge canal system was built to carry both freight and passengers along most major rivers. A series of dams on the western rivers allowed coal to be shipped to the hungry steel mills. Steel products were then shipped downriver to markets in the United States and foreign countries. Now the towns grew even larger. All kinds of jobs were needed to work on the businesses of the river towns.

The railroads put an end to the canal systems. Later, airplanes and improved roads took away some of the river towns dependence on water. Businesses that used water either disappeared or changed to other means of making and shipping goods that didn't rely on water. River towns changed forever.

Today's river towns are neat. Many of them have beautiful homes along the water's edge. Some are college towns, some are county seats. Just about all have fishing and boating on their front porches. Instead of manufacturing and trade, river towns are now good spots for recreation.

When you travel to or walk through your river town, look around. You'll see some of the old and some of the new—all the things that made them what they are today. Remember, they all started because of a river.

Some other Pennsylvania river towns.....
Can you find these on a map?

Newport
Marietta
Jersey Shore
Williamsport
Towanda
Freeport
Franklin
Northumberland
Riegelsville
Renovo
Milford
Falmouth
Tunkhannock
Kittanning
Lewistown

graphics- Ted Walke

FLY FISHING CREEKS AND RIVERS

BY NICK SISLEY   PHOTOS BY THE AUTHOR

During August most stream trout can confound fly fishermen possessing the most skill and finesse. But there's no need to put the long rod with the small guides away. When huckleberries ripen, when grasshoppers become pests, when sweet corn is ready for picking and you have tomatoes galore, smallmouth bass in our state's rivers and creeks are anxious to accommodate the fly fisherman.

How and where can you expect to enjoy some of this rewarding sport? Take a figurative step back to view our entire state. What is obvious from an overhead satellite picture is that three major rivers flow generally north to south, draining the Keystone State. From east to west this trio is the Delaware, the Susquehanna and the Allegheny. If you love fly fishing big water, you need to go no farther than any one of these three.

Susquehanna

Let's check out the Susquehanna August possibilities first. This river is one of the best smallmouth waters anywhere. From mid- to late July the White Miller hatch peaks. Though this is a mayfly and not really a white miller, that's the colloquial term the fly receives. These flies come off each evening in phenomenal abundance.

In most years the White Miller hatch on the Susquehanna lasts until early August. Most any big white fly brings strikes. Bob Clouser, who guides this portion of the river out of Middletown, suggests a large White Wulff. Gaines (tackle company in Gaines, PA) makes a fly called the Hairy Mary, with deer hair body and two long deer hair wings. It comes in all white—sizes 4 and 8. I've had excellent luck with it before and during the day's White Miller hatch. Before this evening hatch (during the day) in August, also try a white popping bug.

Generally, the White Miller hatch moves farther upriver each night. Though the lower Susquehanna hatch is phenomenal, this fly hatches through August upriver and on numerous other Pennsylvania streams. This mayfly is often a bit smaller in smaller waters.

After the thrill and magic of the White Miller hatch finishes on the lower Susquehanna, look for another white fly, Potamanthus. It's about a size 14 or 16, but not unusual with smallmouth bass, you'll often increase your chances for success by going to a similar fly at least one size larger. For the Potamanthus hatch tie on a size 12 white cork popper or a size 12 White Wulff. This fly hatches throughout the day and then becomes especially prevalent the last half-hour of light.

Another prominent lower Susquehanna fly smallmouth bass feed on in August is the Brown Drake.

If you're not having surface success in August on this part of the Susquehanna, try going subsurface. Fish slowly close to the bottom with nymphs or heavily weighted streamers. Don't sell a fake crawfish short here or on most any other Pennsylvania river or creek.

Another ploy, when white dries or poppers don't produce, is to switch to a dark-colored popping bug. When possible, select overcast days. Concentrate your efforts on the last two hours of the day.

Outdoor writer Keith Schuyler is the consummate surface fly fisherman. His main smallmouth bass stomping grounds are the upper Susquehanna, the North Branch upstream and downstream from his hometown of Berwick. Schuyler says there's a mayfly similar to the lower Susquehanna's White Miller, but this fly is a bit smaller and it's white and pink in color.

"Nick, this fly comes off in droves some evenings, usually in August. So many flies are in the area at dusk, they sometimes chase me off the water, getting behind my glasses and generally making nuisances of themselves."

Many white mayfly imitations duplicate this abundant August fly. Keith suggests a size 10. Some fly fishermen go subsurface during the day and do well, but Schuyler says he has more fun sticking with a surface offering no matter the time. And he catches his share. Usually he opts for a red-and-white popping bug for random-cast fishing. He thinks the white gives the illusion of a fish's belly.

Try working the bug fairly fast, especially over the deeper runs, but leave some time between your popping bug pops. Work that surface fake too fast and you'll end up missing a lot of strikes. Actually, the smallmouth miss the bug. Even if the upper Susquehanna is slightly off color, Keith still

MORE ABOUT PENNSYLVANIA CREEKS AND RIVERS

Two Fish Commission publications provide more details on the waterways mentioned in this article plus lowdown on other productive creeks and rivers.

- *Paddle Pennsylvania* is a 36-page guide for Keystone State canoeists. It features section-by-section detailed descriptions and maps of some 18 Pennsylvania waterways, many of which are smallmouth bass havens. The publication is available for $1 postpaid.
- *Guide to Public Fishing Waters and Boating Access* is a 102-page book that lists Pennsylvania waters open to public fishing, and boating accesses. The county-by-county list of waters open to public fishing includes each waterway's acreage or miles, the nearest town, and the fish species you'll likely catch. The county-by-county boating access list includes available facilities, customary class of boat used, primary kind of boating, and brief directions to the accesses. This publication is available for $2 postpaid.

Make checks payable to Pennsylvania Fish Commission and send orders with payment to: Publications Section, Pennsylvania Fish Commission, Dept. P, P. O. Box 1673, Harrisburg, PA 17105-1673.

takes river bass on topwaters. I've had the same experience in the lower Susquehanna. Obviously, the noise the popper makes at the surface gets the quarry's attention.

Schuyler points out something that's universally true about smallmouth bass. He tends to run hot and cold catching them any given day. He might cast for hours with no luck and then hit a hot period when he can't miss. But eventually things cool off considerably, with cast after cast again unproductive. Every serious smallmouth bass devotee has experienced similar days.

One more upper Susquehanna tip. Keep on the lookout for fish rises that barely dimple the surface. Often these are smallmouth bass feeding on tiny dries. This can be great sport, taking 10-, 12- or 14-inch bronzebacks on a size 14 or 16 Adams, traditionally cast for trout.

Upper Allegheny

The upper Allegheny, especially below Kinzua Dam, has become a great trout fishery and a year-round one at that. But smallmouth bass are still there and you can take them in August. Mike Bleech, outdoor

writer in Warren and frequent *Angler* contributor, believes that there may not be as many bass in the upper river compared to pre-dam days. But Mike thinks the upper Allegheny now holds even bigger bronzebacks.

In August there is a white mayfly, but it's not as big or as dependable as the famous White Miller hatch on the Susquehanna. Bleech recommends working subsurface flies carefully around the river islands in this area as well as around boulders, rocks and shoals.

"Try a crawfish pattern. For most waters that hold smallmouth bass, the fly should be weighted," Bleech suggests.

Keep an eye peeled for rising fish, especially early and late in the day. Are they trout or smallmouth bass? If they're trout they'll be tough to fool in August. If they're smallmouth bass, they'll probably be pushovers in comparison. A perfect fly imitation isn't essential, but do work toward soft touchdowns, keeping your casting motions low and wading quietly. The farther below Kinzua dam you get, the better the smallmouth potential becomes.

Outstanding Allegheny River fly fishing water begins around East Brady and extends upstream for scores of miles.

As with smallmouth bass fishing anywhere, choose overcast days. Work weighted flies, especially crawfish patterns, over shoals, and around rocks and boulders. Streamers are effective in such places, too, as are big so-called bass flies. Typically, these are tied on large hooks, and they may have water-absorbing chenille bodies, large wings and hackle. Work them by casting quartering downstream.

No matter the conditions, I never fail to try a surface fly when smallmouth are the quarry, especially a popping bug. Frankly, this is by far my most effective smallmouth bass taker, but then, I do fish it a lot!

Delaware

Mike Watson, wildlife artist from Allentown, has considerable savvy on the Delaware. I haven't used imitation hellgrammites much on our rivers, but Mike has. This stonefly nymph is a favorite fish food, and they're prevalent in our bass rivers. The best way to fish a hellgrammite is the same way you would work a nymph for trout. Cast upstream and let the offering tumble back with the current. This is not an easy way to fish. It requires constant attention, even a sixth sense to help you decide when a strike occurs. A strike indicator on the leader or on the end of the fly line can help.

Watson suggests wrapping weight into your Delaware River flies. There are also many other stoneflies (besides hellgrammites) in this big river, and the bass depend on them heavily. Another excellent weighted fly is a Muddler or a White Marabou streamer. Work these offerings in typical streamer fashion, twitching them across-current after a cross-current or slightly downstream cast.

"Fishing the smaller wet flies in August can be a lot of fun, as well as produce excellent results," Watson says. "Try a Hare's Ear and an attractor wet fly pattern like a Coachman. Bet you'll be surprised at the action."

We've only made suggestions for our three major rivers, but tributaries to this big trio provide smallmouth bass by the numbers and memories by the bucket load. Some examples include the Juniata to the Susquehanna, the Clarion to the Allegheny, and the Lehigh to the Delaware.

Other possibilities

Let's also look at some even smaller stream possibilities. Mahoning Creek in Armstrong County can provide good August float fishing from Route 66 downstream. When the water's low, you'll sprag plenty, but you'll also catch bass. The water will probably be fairly clear, so to improve your chances, beach the canoe before fishing down into each potentially good pool. Wade quietly into position keeping a low profile, and then work the good-looking spots carefully before disturbing the bass with your float-through.

Conodoguinet Creek offers smallmouth sport aplenty as it meanders with its countless twists and turns through Cumberland County on its way to the Susquehanna. The lower Mahoning Creek offers minimal road access, but there's access galore to the Conodoguinet, and lots of bridges that can act as take-in and take-out points if you want to float.

No August secrets here. I suggest arriving early. Begin casting as soon as there's enough light. This stream receives more pressure later in the day, and I believe the bass get a bit spooky after joggers plod along the stream banks, cars and trucks continually ramble over its bridges, and a bright August sun peaks between the overhanging sycamores. An August fly fisherman could be on the Conodoguinet casting at five o'clock in the morning, catch a limit of smallmouth, including perhaps one or two that push two or more pounds, and still be at work on time.

The lower Lehigh does have smallmouth bass, but there's a great deal of deep, fast water here, which isn't fly fisherman-friendly, if you know what I mean. Still, those deep holes harbor some big fish, so maybe some fly fishermen would consider fishing the Lehigh a challenge, discovering methods that could put productive flies in those deep smallmouth payoff zones.

The whole point is that August, traditionally thought of by many as a slow month for fly fishing, is actually one of the best months. Our state's three most important rivers provide the avenue to many rewarding days. They're backed up by scores of additional rivers and creeks, many of them begging for a fly to be cast on them.

Trapping Eels on the Susquehanna River

by Carl Callenbach

We're low over the Susquehanna River, just south of Harrisburg near Middletown, flying above the riffles at the mouth of Swatara Creek. My Uncle Jesse calls to the pilot: "Can you slow the plane down a bit? Drift in from the east to the creek. That way we can see the shadows of the rocks from the dam."

"You mean the old eel weirs?" the pilot asks.

"We called them eel dams," my Uncle Jesse says. "I want Carl to see all that's left."

The pilot banks the plane and throttles back, and we glide toward the Swattie.

"There!" my Uncle Jesse shouts. "That first row of rocks this side of the creek! That's part of your Grandfather Earl's eel dam. That's where we trapped for eels on the Susquehanna River."

Long ago, before they built the hydroelectric dams on the Susquehanna River, my Grandfather Earl, now dead and buried near Falmouth alongside his beloved river, trapped for eels. Each fall thousands of adult female freshwater eels moved down creeks and runs and other rivers—Tunkhannock Creek, Fiddle Run, the Juniata River—tributaries to the Susquehanna, then to the Chesapeake Bay. From brackish estuaries male eels joined the journey to the Atlantic Ocean, and finally to the Sargasso Sea by mid-winter to spawn and die.

Many eels never completed this passage down the river. Eelers up and down the Susquehanna River caught them, 50,000 in 1912 alone reported, and 15 years later Grandfather Earl trapped close to 1,000 each year until the Conowingo Dam was built. Like a huge valve it slowly cranked closed, turning the eel trek to a trickle. Then it was over.

Grandfather Earl held no steady work then. It was the Depression. His summers were dotted with a job here, a job there. If he had no work, he hid on the river, and took Uncle Jesse with him when there was good bass fishing or the shad were running, and of course, to trap eels.

With the spring floods ice jams clear the river. Later the June sun warms the water. When the river rocks protrude enough, Grandfather Earl in worn-out fishing waders, and Uncle Jesse, 10 years old in shorts and sneakers, wade the wings of the dam, maybe 400 feet each side, the top, 100 yards across. The dam is a giant flat rock funnel that steers the water toward the eel chute, traps and shanty.

They walk the wings laying up the dam, replacing rocks in holes torn open by fierce spring waters or smashed and pushed asunder by huge chunks of floating ice. Their goal: Raise the water level within the dam at least two feet.

A week later Grandfather Earl and Uncle Jesse tow out the dismantled chute, assemble and anchor it, and embed the wooden channel atop and within the rocks forming the funneled end of the dam: a trough, 5 feet wide and 20 feet long made of strong wooden planking. It's pitched like a ladder with sides upward to meet a small wooden deck attached to the shanty. Both the deck and shanty span the chute and rushing waters.

They check each laddered compartment in the chute for seasonal wear, making sure the slatted sections that complete the traps now stored in Grandfather Earl's cellar will fit securely.

It's hard work. They pause for rest and peer into the chute waters. Before the coming of the dams, on a dark and cloudy day they might have seen a myriad of 4-inch elvers, young female eels migrating upriver. (The encyclopedia calls this an inexplicable journey because there were no parent eels to guide them.)

A year-long trip at least, the elvers climb minor dams, swim through aqueducts and tunnels, and sometimes pass over dew-wet fields on their way to the headwaters of the Susquehanna River. For 10 years or more they remain, in daylight hiding themselves under some covert, or underwater sodden boards, in holes in stream banks. They are scavengers at night, devouring all kinds of water-dwelling animals and insects, alive or dead, small fish, frogs or crayfish until—two or three feet long now—something inside them hears the Sargasso Sea calling.

On another day, if the spring ice flow hasn't taken down the eel shanty, Grandfather Earl and Uncle Jesse load their 16-foot flat-bottom boat with patch supplies. They paddle their way alongside the shanty and tie up. Working out of the boat, they repair the 5 x 6-foot box with a 4-foot-high roof and a leather-hinged door attached at one side.

"You can bury me in my eel shanty," Grandfather Earl tells Grandmother Melanie with a wink toward Uncle Jesse; he knows the law, my Grandmother's chagrin at such loose talk! They use wood scraps rescued from the river, and they cover the roof with fresh tarpaper.

Often the spring flood flushes the shanty down the river. Then Grandfather Earl opens his barn, where in better times he stored strong posts and plywood, enough for five or six shanties. Uncle Jesse guesses Grandfather Earl believes eel trapping on the Susquehanna River will last forever.

Fashioning a new shanty takes a day or two: a few boat loads of supplies, four poles buried in river rocks, plywood cut and nailed in place, and the door set and roof attached. No hurry. One summer when the fishing is good, it takes all of August!

On an afternoon in early September before Uncle Jesse returns to school, a dangerous wind from the east kicks up the river and quells all thoughts of fishing. Grandfather Earl and Uncle Jesse go to the barn, pick up the two eel holding boxes and carry them to the dammed-up spring in back of Grandfather Earl's house. Slatted on the bottom, these two 8 x 4 floating boxes will be tied to the side of the shanty deck when the eel run begins.

Back in Grandfather Earl's cellar they carefully inspect the 5-foot sections of rounded 2-inch white pine slats, check the half-inch gap between each slat, and reinforce the weak frames and replace the rotten ones.

Then one mid-October morning Grandfather Earl hauls a holding box to the shanty, returns and loads the flat-bottom boat with the wooden eel rake, a half bale of oat straw for the shanty floor, a kerosene lantern for light and heat, an alarm clock, 23 dog-eared westerns for reading, and a gallon of homemade crab apple wine. They are ready for eels now. They await the late October and November nights when the fall leaves are heavy on the water and skim ice forms around the edges of exposed rocks.

Late afternoon on another day Grandfather Earl packs up two bologna sandwiches, a few pickled eggs and three GI canteens of water. He places everything in a paper poke, wraps the bag in an old woolen blanket and fits the provisions in the boat alongside the slatted traps. At four o'clock the traps are in the chute, ready for eels.

Grandfather Earl spends many an evening and night in October hunkered over his reading, beneath the kerosene lamp, four feet above the torrent of water passing through the chute beneath him. Around midnight he tires, finishes his last egg, takes a nightcap from the gallon of wine, curls up the best he can in the straw and sleeps. The next morning he pulls the slatted traps before eight o'clock, stores them in the shanty, and heads home. No eels. Maybe the run will start this weekend when Jesse's here, he thinks (no fishing on Sundays).

It doesn't, but no matter. Uncle Jesse tells his teacher there is nothing on earth more beautiful than the Susquehanna River at night: the flickering lights and shadows cast on the waters by kerosene lanterns in eel shanties scattered here and there, up and down the river; the river music from the chutes and shore rocks; the potpourri of river smells. Uncle Jesse loves sitting cramped in the shanty beside Grandfather Earl, reading, listening, waiting, wasting another late October night. ("Just so you get all your homework finished," his teacher tells him. Uncle Jesse says he learned how to read in school, but he actually learned to read in Grandfather Earl's shanty.)

illustration- Tom Duran

Two weeks later Grandfather Earl and Uncle Jesse are eating potato chips and drinking homemade root beer when they hear the slap of an eel's tail on the bottom section of the chute. Uncle Jesse yells and Grandfather Earl smiles. He knows with time the eel will climb the section ladders up to the last wet trap. Grandfather Earl also understands that Uncle Jesse can't wait that long. He crawls from the shanty door onto the deck, stands and grabs the rake, walks the chute, and rakes up the eel, section by section until the eel is on the deck.

Before Uncle Jesse rakes it off the edge of the deck into the holding boat, he takes a long, close look. He sees a fish with snake-like appearance and long dorsal and anal fins, whose scales are embedded in a slimy, gelatinous skin. The eel is about 20 inches long, blackish-brown, a broom handle in diameter, the size, Grandfather Earl says from the shanty door, housewives prefer for frying. He guesses the eel weighs about 2 1/2 pounds.

They crawl back into the shanty, turn down the kerosene lantern and sleep restlessly the three hours to sunrise. At 7:30 they pull the slatted traps and grab the eel from the holding boat. "Never been bitten by an eel," Grandfather Earl says. "Now their mouths surely look mean, but it's the strength in their tails that can bruise you."

They take the eel home where Grandfather Earl implants its head on one of many sharpened nail heads on the garage door. With a knife he makes a level incision around the eel's body below the head. He pulls the skin and scales, peels it with pliers, and then guts the carcass. Grandmother Melanie slices the butchered eel into 2-inch pieces and fries it for Saturday lunch.

For another week they await the main run. It generally tapers in and tapers out, Grandfather Earl says. He brings three home on Monday, 28 altogether by Friday, all stored in the holding box in the spring run where the eels cleanse themselves. Grandfather Earl kills them on Monday afternoon. Grandmother Melanie cans the lot in salt brine that evening, four hours before the main run begins.

Grandfather Earl is sitting in the shanty eating a peanut butter and jelly sandwich when he hears the tail slaps of a half-dozen eels. He carefully wraps the remainder of his sandwich in wax paper, grabs the lantern and crawls to the deck. He stands and watches eels ascend the ladder sections.

The shouts of other eelers all across the river tell him the main run must be on. Grandfather Earl grabs the rake, pulls eels up the ladder to the deck and kicks them off the edge into the holding boats. Two hours and 53 eels later, the run slows. Grandfather Earl returns to the shanty, sets the alarm for seven and grabs a nap before daylight. He thinks tomorrow night may be even better. He'll bring Jesse with him to the river, school night or not.

When he awakes, he finds 10 more eels in the traps, rakes them up and pulls the slatted traps. Grandfather Earl makes two trips to shore this morning, towing the eel boxes. An hour later he's transferred the eels to the spring holding box.

On most November Mondays and Tuesdays Grandfather Earl and Uncle Jesse load the butchered eels into four wash tubs full of icewater in the back of Grandfather Earl's Model A truck. With Uncle Jesse's two younger sisters they peddle the eels door-to-door in Middletown and parts of Harrisburg. Grandfather Earl gabs with old customers and friends. He sends Uncle Jesse and his sisters into strange neighborhoods to seek out new customers.

At dark they return—time to head for the river—and ice down the unsold eels. Often Grandmother Melanie cans them in the morning. Depression winters are long, the price of store-bought meat impossible, and the deer, rabbit, and pheasant hunting harvest is uncertain.

Uncle Jesse spends the next three nights on the river with Grandfather Earl. Each succeeding night the eel run increases. Grandfather Earl faults the moon: The darker the night, the heavier the run. Keeping count is senseless now. They take turns raking on the deck and resting in the shanty. They snack on Grandmother Melanie's meatloaf sandwiches. On Thursday there's fresh cow's milk in the canteens.

This doesn't keep Uncle Jesse from looking always for the big ones—parboilers, Grandfather Earl calls them: Parboil with water and vinegar before you fry them to kill the strong flavor. Except Uncle Jesse gets careless on deck, reaches for the monster eel, falls and lands half in, half out of the holding box. Grandfather Earl laughs and takes his time pulling him back on deck. Uncle Jesse spends the rest of the night inside the shanty bundled in eel slime and the woolen blanket, smelling like the parboiler he lost on deck.

Uncle Jesse must go to school, so each morning they pull the slatted traps an hour early, at seven, and head home, pulling half the eels. Uncle Jesse changes his crusted clothes, takes a bath and eats breakfast. "That eel must have been 5 feet long, as big around as my leg!" He tells Grandmother Melanie. She laughs and tells him he came in stinking like it was even bigger. Grandfather Earl then makes the second trip to the shanty.

Uncle Jesse falls asleep in arithmetic class on Friday, prompting a note from his teacher. Grandfather Earl shakes his head, says, "Jesse's got almost 180 arithmetic classes each year. The eel run lasts but a few days." But Grandfather Earl, not counting Friday and Saturday nights, finishes out the season alone.

On November 30, Grandfather Earl and Uncle Jesse dismantle the chute, tow it and the shanty furnishings to shore and store the chute and eel holding boxes in the barn. They place the slatted trap sections in the cellar, off the floor, near the furnace.

Grandfather Earl carves the final eel count on the garage door where he does his butchering, among numbers reflecting better times:

1933 353 eels

"Look at that," he tells Uncle Jesse. "And it will only get worse: it's the cursed dam! Trapping for eels on our Susquehanna River is almost history, almost just words!"

We circle back and cross the Susquehanna River. My Uncle Jesse points out the remains of four other eel dams, a line of rocks here and there. He shouts to the pilot to head upriver. He wants to show me the exact spot Grandfather Earl had his best shad fishing. He turns to me, still shouting, "But that's another story. The dams put a quick end to the shad runs. Your Grandfather Earl had a temper. He dreamed about dynamite, him and a lot of other river rats like him. But he did nothing. He held onto his boat and fishing equipment until the last of the eels came down the river. Then he sold his boat and gave me his gear. He just up and quit the river. Like I said, he had a temper!"

My Uncle Jesse turns away and looks down at our river. His voice is soft now, like the slow-moving eddy above the mouth of Swatara Creek.

"It was a good time to be a kid," my Uncle Jesse says. "Your Grandfather Earl and me—we had us a time on that river!"

The author dedicates this story to the late Harry Poorman, a Susquehanna River eeler of the 1930s who helped the author write this story by telling many anecdotes and descriptions.

August Trout Fishing Success

by Jeff Mulhollem

Walter Young

Fly fishing for trout in Pennsylvania in August and early September separates the men from the boys. The easy-to-fish hatches of spring and early summer are long gone, the foolish hatchery fish have been removed or educated, and the water in Commonwealth streams is usually low and clear.

To succeed on most waters, a long-rodder has to use a longer leader than earlier in the season, ending in a tippet fine enough so that a nice fish becomes a tense battle. Sloppy casters often find that their best offerings spook wary fish in air-clear currents, and fly fishermen discover they have to worry about things such as where their shadows fall and whether they are pushing water when they wade, sending ripples to signal trout of their presence. These things are hardly factors in April.

All this is as it should be because at summer's end, when the best hatches occur just before and after dark, and shortly following dawn, there are no crowds to laugh at your mistakes, to watch the trout fool you or to ruin your day. You have to work a little bit harder to catch fish in August than you do in May, perhaps, but the rewards are somehow greater. It has to do with the solitude of late-season fishing, I think.

You don't have to be a wizard or an expert to catch fish now, but there are a few things you can do to help you catch more trout.

The easy things are carrying and using a thermometer, knowing which terrestrials are likely to produce, picking the proper waters to fish and timing your appearance astream to catch the two best hatches of the late season—tricorythodes and the white mayfly.

Understanding the relationship between water temperature and trout feeding and survival can help you consistently locate fish on Pennsylvania streams, many of which are marginal habitat for trout in August. Having the confidence in a few terrestrial patterns like ants and beetles pays off when no aquatic insects are showing. And knowing when and where tricos and whiteflies are likely to show up is essential. They are two of the more dependable hatches of the year, but you have to understand a little bit about them to catch fish consistently.

Take the temperature

For about $10 you can be a better trout fisherman in August. That's what it takes to buy a good-quality stream thermometer. That one purchase helps you catch fish in late summer, more than a new $300 graphite fly rod, a $40 ultra-high-floating fly line or a secret selection of flies.

Carrying and using a thermometer can seem like work, but awareness of water temperatures can make a world of difference in August. You can get away without using a thermometer in spring and early summer, when most streams stocked with trout are cold enough for the fish to feed actively and survive, but after July 4th, many parts of the Commonwealth's best-known trout streams get too warm.

Pine Creek, Kettle Creek, the Sinnemahonings and the Little Juniata River, to name just a few, are all known as some of the best trout streams in the state. But each has temperature problems that result in stretches of those storied waters becoming too warm for trout in August. Many other marginal waters where trout are stocked in the spring are also too warm now. The fish have been caught, they died or they moved to find cool water either in a tributary stream or near a spring in the stream bottom.

Your favorite haunts in the spring and early summer may be devoid of trout now, even though they still look good. The only way to tell for sure is to take the water temperature.

For browns, when the water gets much past 70 degrees for very long, they can't survive. Rainbows can tolerate a little warmer water, and brook trout must have water a bit cooler (65 degrees maximum). There are exceptions, however. Cooler water holds more oxygen, and trout have been known to tolerate higher than usual temperatures if the water is highly oxygenated. In some cases, trout also become conditioned to higher temperatures, but you can't count on that.

In August, the best time to fish is early in the morning and in the evening, when the water temperature is coolest. Use your thermometer to find water cooler than 70 degrees, if you can. When you catch your first fish or two, take readings. You might have stumbled onto a cool spot because of a hidden spring you didn't know was there.

Freestone streams are the most susceptible to water temperature rising too high for trout. Limestone streams, fed by groundwater, keep a fairly constant year-round temperature. Because warm temperatures are rarely a problem in blue-ribbon limestone-influenced streams like Spring Creek near State College, those streams fish better in August.

Terrestrials

If you read much about fly fishing in the West, and it seems like I always have, you are no doubt impressed by tales of long-rodders using grasshopper patterns in late summer on big rivers like Montana's Madison and experiencing explosive rises from big trout hiding along undercut banks. Although I am not a bad fly tier, one year I got so pumped up I ordered a bunch of Joe's Hoppers and got ready for some Pennsylvania hopper action. I was greatly disappointed.

In the magazines, smug fishermen confidently slap hoppers down loudly on the water and wait for lunkers to cruise in to gulp down the deer hair imitations. It didn't work that way for me. Those fancy hoppers languished in a fly box for several Augusts before I ever got them out after that first year. Now I know there is a section of Spruce Creek in Huntingdon County that glides through lush farmland that can offer spectacular hopper fishing in August and September. But you have to hit it right—a cold day after a long hot spell in a dry year. I may have those flies for the rest of my life.

Ants

There is at least one terrestrial pattern, however, that I would probably choose if I had to pick one dry fly to fish throughout the year. It's an ant, and it will take fish from March through November.

At the vice I keep ants simple. Although I have tried everything from deer hair creations and McMurray Ants to ants made from wintuck orlon, the only ones I use now are constructed of Australian opossum fur and a few turns of hackle. Why? Because I consistently catch fish on them, they seem to float better than other fur ants, and they are so easy to tie, even in very small sizes.

I admit I wouldn't know an Australian opossum from an orangutan, but I started using the exotic fur on the advice of a friend and I know better than to change a winning combination. My friend says the Australian opossum is like an American muskrat—a water-loving mammal whose coat is oily and won't absorb water. That's why those ants float so well, he says.

It sounds like nonsense to me, but ever since a memorable August afternoon ant fishing on Big Fishing Creek near Lamar, Clinton County, a few years ago, that's all I use. Half of dry fly fishing is confidence, I believe, so if you trust a pattern, stick with it, no matter how many eyebrows you raise.

There are, of course, all manner of terrestrials that come in handy at this time of year. I always carry a few beetles, Jassids, crickets and inch worms with me when fishing in August and September. At one time or another they have all taken fish. The important thing is to be aware of your surroundings and to notice when a particular bug is required.

One hot, still August afternoon in the sometimes fabulous fly-fishing-only stretch of Penns Creek was saved for me a few years ago when I noticed that a bunch of small streamside trees had skinny, green and wormy caterpillar-like insects dangling from them on gossamer threads. These low trees had lots of what I was told later were inch worms in them, with holes in the leaves where the critters had been eating.

I dug out a few never-before-used worm patterns from a box I haven't opened since, and caught fish.

The tricorythodes hatch

When I became Sunday editor at the newspaper where I work, I got stuck working every weekend. But I had every Monday off, and I soon learned that you don't see many fishermen astream on Monday mornings. During those years, I spent just about every summer Monday on Centre County's Spring Creek, a phenomenal wild trout fishery with a stellar trico hatch. I got so adept at catching trout on tricos that I even wrote a story about it for the *Angler* and considered myself as sort of an expert. Then I had the chance to fish with some real experts and I now consider the whole phase I went through a naive embarrassment. Still, the trico hatch remains one of my favorites.

Tricos are a tiny (size 22 or 24) black and white mayfly that hatches from many Pennsylvania streams from July through September. Their activity is amazingly predictable, with hatches usually commencing just after dawn and spinner falls occurring between 9:30 and 10:30 a.m. Despite their small size, in the streams where I fish the biggest trout feed voraciously on tricos, probably because of the staggering number of flies on the water. The hatch can be maddening to fish, but what a challenge!

There's no room here to tell you all the finer points of succeeding during a trico hatch. But I have a few tips: Use only quality tippet material like Dai Riki or Orvis Superstrong. With 7X sometimes necessary, you'll lose many big fish, anyway. Watch your knots. Have both poly-winged spinners, trimmed hackle-winged spinners and dun patterns available, and lots of them. (I don't bother with wings in my duns.) You'll lose a lot of flies, and some days fish will prefer one pattern over another. They'll always be frustratingly choosy. Don't ever start fishing until the hatch is well under way and the trout are regularly sipping tricos. Only a true expert can catch fish on a tiny trico nymph, and you are liable to spook the fish early on. Later, when the trout are lined up, sipping trico spinners, it often seems as if you could drift through them in a float tube and not interrupt their feeding—they are that focused.

The white mayfly hatch

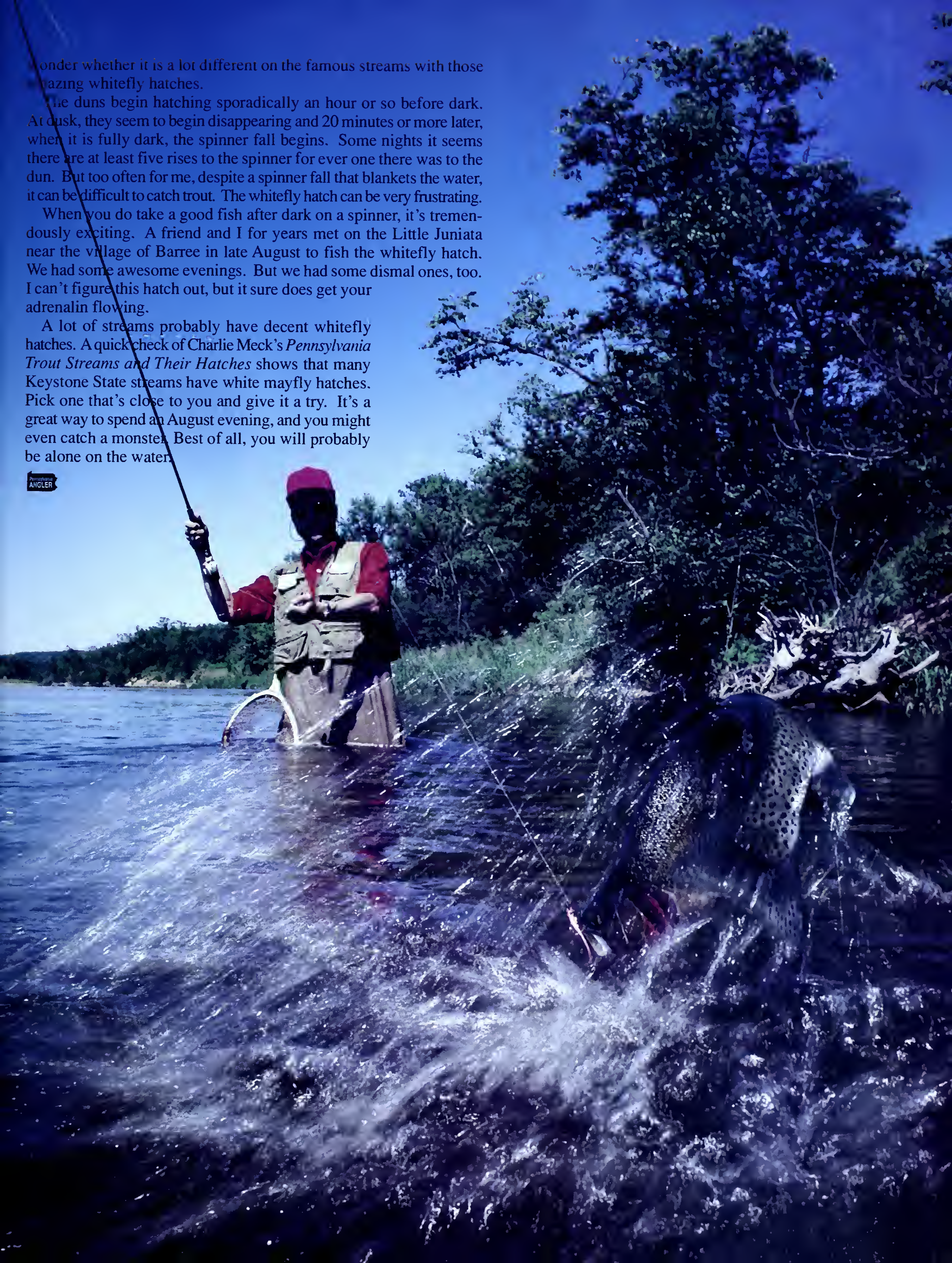
None of the streams I fish has outstanding whitefly hatches as do some in the Cumberland Valley. But my home river, the Little Juniata, most years has a pretty decent hatch of the big white mayflies in places and the last two weeks of August and the first two weeks of September are when it generally occurs most years. The duns come off just before dark. The spinners fall after dark. There is usually a lull of up to a half-hour between the two, and I have often seen other anglers leave the river at dark, thinking the fun is over. If they only knew.

I use all white hair-winged and poly-winged spinner patterns with Microfibbetts for tails in sizes 12 and 14 and occasionally clean up. It's never easy fishing and I admit I'm never sure why fish don't eat the spinners some nights when there seem to be plenty of them on the water. I often wonder whether it is a lot different on the famous streams with those amazing whitefly hatches.

The duns begin hatching sporadically an hour or so before dark. At dusk, they seem to begin disappearing and 20 minutes or more later, when it is fully dark, the spinner fall begins. Some nights it seems there are at least five rises to the spinner for ever one there was to the dun. But too often for me, despite a spinner fall that blankets the water, it can be difficult to catch trout. The whitefly hatch can be very frustrating.

When you do take a good fish after dark on a spinner, it's tremendously exciting. A friend and I for years met on the Little Juniata near the village of Barree in late August to fish the whitefly hatch. We had some awesome evenings. But we had some dismal ones, too. I can't figure this hatch out, but it sure does get your adrenalin flowing.

A lot of streams probably have decent whitefly hatches. A quick check of Charlie Meck's *Pennsylvania Trout Streams and Their Hatches* shows that many Keystone State streams have white mayfly hatches. Pick one that's close to you and give it a try. It's a great way to spend an August evening, and you might even catch a monster. Best of all, you will probably be alone on the water.



Pennsylvania's Biggest Brown Trout:
Where, When and How Anglers Catch Them

by Art Michaels

There were 143 Angler Awards issued for brown trout catches in 1990, of which 19 were Junior Awards and 124 were Senior Awards. The minimum qualifying weights for brown trout are 5 1/2 pounds for a senior award and 4 pounds for a junior award.

When

Trout fishermen caught award-sized brownies in 11 of the 12 months of 1990. Here's the breakdown: January, 6; February, 7; March, none; April, 45; May, 24; June, 12; July, 11; August, 6; September, 5; October, 11; November, 12; and December, 4.

Lures, baits

A large variety of baits and lures fooled 1990's award-sized brown trout. The offerings were: lure, 9; jig, 8; spinner, 8; spoon, 7; fly, 4; minnow, 38; worm, 29; salmon egg or egg sack, 17; mealworm, 7; corn, 6; maggot, 3; crayfish, 2; herring, 1; cheese, 1; and cricket, 1.

Where

Here are the waterways where anglers caught their big brown trout, along with the county location of the waterway and the number of fish caught from each waterway:

Yellow Breeches Creek, Cumberland County, 11; Lake Erie, Erie County, 11; Beltzville Lake, Carbon County, 10; Walnut Creek, Erie County, 9; Little Lehigh Creek, Lehigh County, 8; Lake Wallenpaupack, Pike County, 6; Trout Run, Erie County, 6; White Deer Creek, Union County, 5; Elk Creek, Erie County, 5; Jordan Creek, Lehigh County, 4; Harveys Creek, Lehigh County, 3; Allegheny Reservoir, McKean County, 3; Monocacy Creek, Northampton County, 3; Bushkill Creek, Northampton County, 3; Fishing Creek, Columbia County, 2; Clarks Creek, Dauphin County, 2; Quittapahilla Creek, Lebanon County, 2; Marvin Creek, McKean County, 2; Lehigh Canal, Northampton County, 2; Martin's Creek, Northampton County, 2; and Saucon Creek, Northampton County, 2.

Russ Gettig

Anglers caught one big brown trout from each of these waterways:

Cherry Run, Armstrong County; Hereford Manor Lakes, Beaver County; Raccoon Lake, Blair County; Juniata River, Blair County; Little Juniata River, Blair County; East Branch Perkiomen Creek, Bucks County; Slippery Rock Creek, Butler County; George B. Stevenson Dam, Cameron County; Lehigh River, Carbon County; Pohopoco Creek, Carbon County; Black Moshannon Creek, Centre County; Cooks Run, Clinton County; Powells Creek, Dauphin County; Chester Creek, Delaware County; Antietam Creek, Franklin County; Conococheague Creek, Franklin County; Raystown Branch, Juniata River, Huntingdon County; Little Mahoning Creek, Indiana County; Sandy Lick Creek, Jefferson County; Lost Creek, Juniata County; Cocalico Creek, Lancaster County; Swatara Creek, Lebanon County; Ontelaunee Creek, Lehigh County; Lehigh River, Lehigh County; Little Muncy Creek, Lycoming County; Lycoming Creek, Lycoming County; Pine Creek Dam, Lycoming County; Wissahickon Creek, Montgomery County; Little Bushkill Creek, Northampton County; Mahantango Creek, Northumberland County; Delaware River, Pike County; Little Schuylkill River, Schuylkill County; Sweet Arrow Lake, Schuylkill County; Youghiogheny Reservoir, Somerset County; North Branch Buffalo Creek, Union County; Rapid Run, Union County; French Creek, Venango County; Hemlock Creek; Two Mile Run Lake, Venango County; Allegheny River, Warren County; and Susquehanna River, York County.

State record

No new state record brown trout was caught in 1990, so the current state record stands. That brownie weighed 17 pounds, 3/4-ounce, and was 32.5 inches long. Kevin Coutts, of Paupack, PA, fooled the big brown trout in Lake Wallenpaupack in 1988.

The biggest brown trout recorded caught in 1990 was a 16-pound, 10-ounce monster. Albert H. Stewart, of Berwick, caught the 33.5-inch brute on January 13 at Lake Wallenpaupack.

Your big fish

If you would like a copy of the rules, minimum sizes and an application for an Angler Award, include a business-sized stamped, self-addressed envelope with your request. Contact: Publications Section, Dept. F, PA Fish Commission, P. O. Box 1673, Harrisburg, PA 17105-1673.

ANGLERS CURRENTS

PA Fish Commission photo

Kelly F. Countouris

Kelly F. Countouris: Western PA Aquatic Resource Education Coordinator

The Fish Commission now has a Western Pennsylvania Aquatic Resource Education Coordinator. After a pilot Urban Fishing and Education Program and months of preparation, the Commission has expanded its KARE (Keystone Aquatic Resource Education) program in the western part of the state. Kelly F. Countouris was contracted to meet these new responsibilities.

The Commission's KARE program is an environmental education effort focusing on water resources and aquatic life. It was initiated by the Commission in 1987 and has been approved by the Pennsylvania Department of Education. Several components of the overall KARE program include environmental education materials, teacher education and training, volunteer recruitment, fishing skills and resource seminars. The program receives federal funds through the U.S. Fish and Wildlife Service Federal Aid in Sport Fish Restoration Fund.

During the summer of 1990, the Commission piloted an Urban Fishing and Education Program in Pittsburgh. At the conclusion of this successful program, the urban program was expanded to add to the Fish Commission's aquatic education efforts. Kelly Countouris developed and implemented the pilot program and is once again managing this summer's urban program. The focus is aquatic ecology, conservation and basic baitfishing skills. This summer, more beginner sessions and new advanced sessions are offered. The Urban Fishing and Education Program is offered in conjunction with Pittsburgh's CitiParks.

The Fish Commission plans to pilot similar programs in eastern Pennsylvania within the next two years.

For more information on the Urban Fishing and Education Program, or other western Pennsylvania aquatic education "happenings," contact: Kelly Countouris, 101 Elmore Road, Pittsburgh, PA 15221, or phone (412) 247-1769.

Road Erosion Conference

Last January the Fish Commission Pleasant Gap Visitor's Center was the site of a conference on the problems of trout stream siltation caused by the erosion of forest roads. Hosted jointly by the Pennsylvania Council of Trout Unlimited and the Fish Commission, the day-long event brought together leaders from the Department of Environmental Resources, PennDOT, Penn State University, Potter County Conservation District and the state legislature.

John Arway, Chief of the Commission Division of Environmental Services, discussed effects of stream siltation on the reproduction, growth, survival and health of trout and their food sources. Representatives of PennDOT and the Bureau of Forestry reviewed key elements in building and then maintaining roads. Finally, PennDOT and Penn State representatives discussed their respective education and assistance programs aimed at helping individual localities maintain roadways to prevent erosion and siltation.

Even though the seminar focused on 200 square miles in the Sinnemahoning River drainage, Potter County, it was universally accepted that similar problems exist throughout the state.

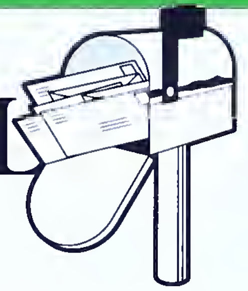
Trout Unlimited has a "memorandum of understanding" with the federal government to help repair road problems of the Bureau of Land Management and the Forest Service, which collectively manage areas having 50 percent of the trout and salmon habitat in the United States. It is hoped that this conference, which engendered a spirit of cooperation, will lead to the adoption of memoranda among the Pennsylvania Council of Trout Unlimited and conservation and resource agencies to protect further the streams of the Commonwealth.—*John W. McGonigle*

Art Michaels

Meet Fred Menke, Commission Bureau of Boating Aids-to-Navigation Coordinator. Fred administers a safe and effective aids-to-navigation program dealing with permitting, placement, maintenance and tracking 1,700 aids throughout the Commonwealth. His other responsibilities include issuing capacity plates, qualifying passenger-for-hire vessel operators to operate passenger-carrying vessels, and the inspection of passenger-carrying vessels operating on Commonwealth waters. Fred came to the Commission in March 1985 after serving 23 years in the U.S. Coast Guard.

ANGLERS CURRENTS

MAIL



Angler-landowner relationships

Please accept this note as a message of gratitude for the Commission litter bags you so kindly furnished our organization, the Fishing Creek Sportsmen's Club, of Benton, PA. We passed them out to the hundreds of anglers on opening day. Most of our activity was confined to some 25 miles along Big Fishing Creek.

You might be interested to note that the reception by the anglers was excellent and an inspection of the banks of Fishing Creek about midday proved the success and effectiveness of the program.

Once again, many thanks for your help. We trust that our mutual interest in good angler-landowner relationships will help keep our shorelines void of "no trespassing" signs.—*Wayne C. Schuyler, Orangeville, PA.*

Tioga County caveat

I am a resident of Tioga County (Mansfield) and I have just finished reading the article "Three for One" in the February 1991 issue on the Tioga, Hammond and Cowanesque lakes in this county.

I heartily agree that these bodies of water offer great and varied fishing opportunities, but there are at least two bits of additional information that readers need to have before they plan a trip to these lakes.

First, even though it does offer excellent fishing for bass, pickerel and panfish, Tioga Lake is largely inaccessible from Labor Day weekend in September through Memorial day weekend in May. Sometimes the opening in the spring is further delayed because of necessary repairs/cleanup at the launch ramp. There is only one launch ramp on Tioga Lake, at Lambs Creek, which, again, is closed nine months of the year, thus denying anglers any spring or fall fishing. When the area is open, anglers must share the lake with water skiers who also enjoy the lake's offerings. I have written to the Corps of Engineers asking why the fishermen must be denied access to such fine fishing, but I got little sympathy.

Second, concerning parking along the lakes to fish from shore, doing so along Route 15 (which is a no-access highway) could net the angler a ticket from the State Police. I learned this the hard way during the deer season a few years back, even though my car was at least 40 feet from the road and posed no hazard to anyone or anything. I have noticed that the vehicles of certain individuals seem to avoid this, but anglers would be wise to beware.—*Brad Brown, Mansfield, PA.*

Downunder comments

I would like to take this opportunity to congratulate the staff at *Pennsylvania Angler* for publishing such an outstanding magazine. It is obviously well-researched and contains informative articles that I have found to be of immense value in managing sports fish and game resources in this part of the world.

We are able to learn from your motivation, expectations of the fishermen whom you represent, and keep up with the changes in technology, thereby capitalizing on many of your initiatives.

There is no doubt in our minds that you have an excellent publication that many anglers downunder find very informative and relaxing to read.—*Dave Stack, Chief Executive Officer, Eastern Region Fish and Game Council, New Zealand.*

1930's mystery

About 1934 or 1935 I was living in Nesbet, PA, just above Williamsport. One day I went to the river and as far as I could see up and down the river were dead fish. The river is about a quarter-mile wide at this spot. I think the water was backed up all the way from the dam at Williamsport.

I always wondered if anyone knew about this fish kill or had pictures. I was only seven or eight years old at the time. I'd appreciate any information on this event you can provide.—*George Wagner, Clarendon, PA.*

Readers who can identify or describe this event can contact the editor.

What a dive

I took several photographs last summer of a beautiful brown trout while I was scuba diving in Loyalsock Creek. I've only been diving a few years and my wife and I were making a night dive, only to find this trout. I even managed to touch it and took pictures even while my wife touched the fish. After a minute or so, it moved about 10 feet and we swam after it. It let us touch it again. It was truly a unique experience and he surely was a beautiful fish. He was about 21 or 22 inches long.

I enjoy reading *PA Angler* and *Boat PA* and I subscribe to both.—*Ronald V. Rubery, Berwick, PA.*

After reading about the joys of Perkiomen Creek in the June 1990 issue, Kyle Hawkins, age 6, and his dad gave it a try last summer. The result: Kyle's 16-inch smallmouth caught on a homemade cedar wood chugger. It was his first cast ever with his dad's ultralight spinning rod!—Charles, F. Hawkins, Philadelphia, PA.

Helpful idea

I would like to pass along to *Pennsylvania Angler* readers something I started to do on my trout fishing trips that could benefit this great sport.

As part of my fishing attire I wear a plastic grocery bag on my wader belt. The plastic bag is used as a place to put other fishermen's litter that I pick up while I fish. Three short trips this year have yielded 13 trout, 12 beer and soda cans, six beer bottles, plus several cigarette packages and styrofoam cups.

Hopefully, with more trout fishermen picking up the other guy's litter, big problems such as the loss of stream access because of "No Trespassing" signs could be averted. Other benefits would be that the beauty of our streams would not be desecrated and maybe the litterbugs would get the message to quit.—*Robert Winter, Warren, PA.*

A thank-you

The Westover Authority and the area sportsmen thank you for your support in maintaining Rogues Harbor Run as an exceptional value watershed. We all know that without the expertise and dedication of the Fish Commission, all would have been lost. It gives us a great feeling of relief to know that we have the support of dedicated people such as you, John Arway, Ed Brown and all the Fish Commission personnel. Again we say thanks.—*Kenneth P. Vrana, President, Westover Municipal Authority, Westover, PA.*

Wants special issue

I'm looking for a January 1940 issue of *Pennsylvania Angler*. I'll buy it, or trade for it.—*John Hein, RD 1, Box 379A, Palmyra, PA 17078; 717-533-3039.*

Backtalk

Argue with the Commission. Applaud us. Advise us. If you have an idea on *Pennsylvania Angler* content, a question about the Fish Commission or about fish and fishing, or a helpful idea, the Commission invites you to write letters to the editor in this space. Address correspondence to: The Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673. The Commission considers only signed correspondence, and letters are edited for clarity and space considerations.

Jennifer Probst holds a 3-pound, 10-ounce brook trout she caught in Clarks Creek, Dauphin County, on opening day. Her father and brother are looking on. Jennifer's brookie measured 18 1/2 inches long.

Guy Bowersox Named Officer of the Year

WCO Guy Bowersox, currently serving Union and Snyder counties, is this year's Officer of the Year, according to Commission Law Enforcement Bureau Chief Edward W. Manhart.

Manhart praised Bowersox's extensive knowledge of the Fish and Boat Code, his activities in public relations, dedication to protecting the state's aquatic resources, reporting accuracy, and excellent working relationship with his deputy force.

During 1990, Bowersox was recognized for his work by the Boy Scouts, a state park superintendent, and the Buffalo Valley Sportsmen's Club.

Bowersox is a 14-year veteran of the Fish Commission. He and his wife have two children, Edwardo, 9, and Martha Rose, 2.

The honor is presented annually to a Commission WCO at the Northeast Fish and Wildlife Conference. This year's conference was held last May, in Portland Maine. The organization includes states from Maine to Virginia.

Russ Gettig

WCO Guy Bowersox

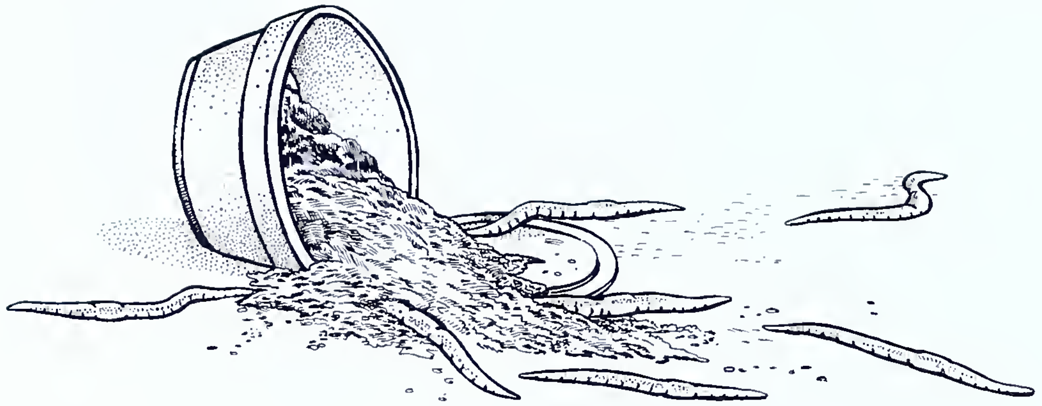
Anglers Currents

Commonly Overlooked Boat Registration Issues

- If a boat is lost, destroyed, stolen or abandoned, the Fish Commission's Boat Registration Division must be notified.
- If you move, a change-of-address form must be filed within 15 days at the Boat Registration Office.
- A Pennsylvania use tax is charged for any boat owned by a Pennsylvania resident if that boat is at any time brought into the Commonwealth regardless of where it is registered or used.
- A valid Pennsylvania registration permits launching a boat on all state park waters where boating is permitted. Unregistered boats and boats registered in other states must purchase a $5 launch permit from the state park office.
- Your registration certificate must be on board your boat at all times when it is operated.

Angler's Notebook

by Chris Dolnack



Commercially raised worms and nightcrawlers—packaged in sealed foam cups—keep bait fresh for several days if stored in a refrigerator. Just be sure to seal the lid tightly!

Fish seek respite from water temperatures that are too warm by holding in shaded areas or at the mouths of feeder streams. Spring-fed submerged ponds also hold fish in lakes.

Small, portable downriggers are helpful in reaching gamefish like walleye, bass and muskellunge suspended in a thermocline. All too often, the fish are too deep for conventional deep-running crankbaits, but the small cannonball consistently puts the lure in the strike zone.

Using a black light is a common nightfishing technique down South. To do so, simply spool your reels with fluorescent line and use a battery operated black light in your boat to illuminate the line.

Cover your boat's interior lights with red cellophane. The red hue does not attract insects or affect your night vision, but it still lets you see well enough to change lures and unhook fish.

For several reasons, fishing seems to be more productive during a light rain. The rain cools the water and adds oxygen and color to the water, all of which help spur feeding activity.

If you're new to an area and want to learn a waterway in a hurry, consider hiring a local guide.

If a pool doesn't produce a strike, try casting in the same pool from a different position.

Ant-patterned flies work well on days when a light breeze wrinkles the water's surface.

Boat docks are summertime hotspots, providing gamefish with comfortable shade and forage.

Work weedlines adjacent to deep water with a six-inch plastic worm and a light slip-sinker. Peg the sinker against the eye of the hook with a toothpick to prevent the sinker from fouling in the weeds.

Dusk and dawn are especially good times to fish farm ponds with fly rod poppers. Approach the bank cautiously and cast parallel to the bank before fanning your casts out toward the middle.

illustration- George Lavanish

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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On the Water

with Dave Wolf

"Too Soon Old, Too Late Smart"

We are becoming older. The baby boom years have passed and baby boomers on the whole are having fewer children, and the average age of the general population has grown older as a result. The younger generations have always looked upon older people as being slower and less competent than younger folks, and that's a shame.

On the water I have found the wisdom beneath those graying hairs something to be valued, explored and perhaps expanded upon. "Old-timers" may have not kept up with modern technology, but they have traveled a long, often weary road and we can all learn from their experiences. It may sound elementary, but it is my personal opinion that you cannot learn as much in 20 years of fishing as you can in 50 or 60.

The older folks among us have paid their dues, they have fallen in more streams than we have fished, been on rougher waters, skillfully maneuvered canoes and labored at the oars of old, dented john boats—skills often lost to modern technology.

I have fished and talked at length with the old and the young. I, too, have aged, and have found great differences in my approach to fishing over the years. I once was a young man with a magical wand that I waved wildly over trout waters and fish-filled lakes. I explored as much territory as possible in the shortest period of time. Yes, I caught fish in good numbers, but I realized that something was missing. It was most apparent when I pranced up and down the stream bank as the silver-haired men and women I fished with carefully strung their rods, checked their leaders and flies and pointed out the beautiful surroundings.

I wanted to fish and fish now, and I could have cared less about wind knots in my leader, a sharp hook on the end of my fly, the wild flowers that grew in the area, or that blasted hawk circling overhead. "For crying out loud!" I found myself screaming beneath my breath, "There are fish feeding; let's fish and worry about all that other junk later."

It is my claim that maturity has slowed my approach to fishing. Maybe it is simply age, but now I check my equipment more carefully, show a greater degree of patience and try my best to soak in the surroundings. I understand the resource now and the fragile life it leads; I have been tutored by some of the finest older gentlemen I know, all with a near reverence for our environment. Some I have learned on my own, but most often I listened to what they had to say, and explored their ideas to see if there was validity to them—more often than not there was.

I now cast more carefully to the waters. I patiently wait on a trout to develop a continual rise, one that I can time and cast to with some degree of certainty. I have gone as far as simply sitting near the water and watching, trying to find every piece of nature I could and absorbing every little parcel.

No, I'm not completely cured. I still get wild-eyed when a hatch is in progress and still rush to get as many casts in as possible in the shortest period of time. When I escape for those few precious hours of fishing I may still be working on office nerves and my patience is tested quickly.

Dave Wolf

But now I know better, often chastising myself for my behavior and trying to find the willpower to pull myself back into a slower more deliberate rhythm. It will come in time, of that I am sure—thanks to those who have been down the path ahead of me and for their sharing thoughts and skills.

One thing for certain is that those "old-timers" have taught me the most: Those who we often overlook for guidance, those among us with the skills and patience to teach those who are willing to learn. It may help us prove the Pennsylvania Dutch saying, "Too soon old, too late smart," incorrect—at least to some degree.

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September 1991/$1.50

Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

EDUCATION

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Straight Talk

Education and "passing it on"

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

Today there are numerous indications that essential foundations for life on this planet are being rapidly degraded. Water, air and soils are essential to human life as well as wildlife and the health of all life is directly related to the health of our environment.

Each day, new scientific concerns are expressed about the effect of human activities on the environment. Many people think some essential foundations have been degraded beyond the capacities to support life-sustaining conditions we presently enjoy. We hear increased inquiries about the quality of the environment, and more and more people are concerned for the future of people and wildlife. However, countless millions still do not share this understanding.

Fish and wildlife agencies have long been convinced that responsible citizens in the 21st century must have the ability and desire to insist that informed decisions are made concerning the quality of the earth's environment. They recognize that creation of an ecologically literate public is essential to the future for people as well as wildlife, and they have taken the lead in this education effort.

Many policymakers fail to realize that the human being is well along the path toward becoming a threatened or endangered species. How can one reach that conclusion? It is reported that over 800 million people now live in abject poverty and more than 100,000 starve to death each day. New and rare human diseases are surfacing regularly. The costs for maintaining human health have skyrocketed so much so that many millions of people, many of whom reside in the wealthiest countries of the world, cannot even afford basic health care services. It should be apparent to everyone that we cannot master the costs of human health or begin necessary steps to improve the health of mankind unless people are educated on how to live in a manner that prevents them from being unhealthy.

Presently there is much analysis of the educational system in this country. Better education is seen as the answer to many of the nation's problems, including people's welfare and productive employment, economic development, security, the war against drug use and serious crime, and a myriad of other issues. Most discussions conclude that improved education of our young people is essential to prepare policymakers for tomorrow on many of these important issues.

The nation's fish and wildlife agencies have taken the lead in implementing strong environmental education programs. Many of these efforts are directed through the public school system to youngsters between five and 18 years of age, but often only on a voluntary basis. A growing number of educators and parents are learning the importance of understanding how our natural resources and processes permit land, water and all living things to maintain their existence. Many educators are reluctant to diversify their teaching efforts further because of lack of time or other restrictions.

Because a basic goal is to teach that human interaction with the environment is a necessity of life, this philosophy needs to be integrated into future curricula as they are redesigned to meet today's needs. We need education for ecological and environmental literacy to preserve the healthy environment that is imperative to *all* life, including the human race.

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In this entire issue we examine "education and 'passing it on'" from several viewpoints—formal instruction, leisure learning, adult views, kids' ideas, philosophical approaches and immediately useful information. The front cover was photographed by Joe McDonald. The back cover was taken by Bruce Ingram.

STATE LIBRARY OF PENNSYLVANIA
DOCUMENTS SECTION

EVOLUTION OF WCO TRAINING

1866-1991
125 years

BY EDWARD W. MANHART

"Son, you're assigned to Luzerne County. Here's your badge, gun, law book and county map. Now get out there and start enforcing the law. Call your supervisor if you have any problems, and by the way, make sure you get your reports in on time."

Many Pennsylvania Fish Commission officers heard these familiar words when they were hired by the Fish Commission as fish wardens in the 1930s, '40s and '50s. At that time, their primary duties were to enforce the law and stock fish. Although attractive to some, low pay, few benefits and little public respect did not provide a large list of applicants. For these jobs, officers were expected to work seven days a week and be available 24 hours a day. They finally were permitted one day off a week in the 1950s, but they had to notify their supervisors of their whereabouts. Other than obtaining a few "tips" from experienced officers and learning by doing, formal training was almost nonexistent.

As Commission emphasis and public demands changed in the 1950s, it seemed desirable to provide training for fish wardens. This consisted primarily of a few days of in-service training for all wardens, and those newly hired were assigned to work in hatcheries cleaning raceways for two to three months. They did learn something about fish culture, but hardly any of the work related to law enforcement procedures.

During this era and until the early 1970s, wardens worked out of uniform most of the time and drove their personal vehicles for patrols.

In 1964, "warden" positions were given Civil Service status and entry-level exams were conducted by the Civil Service Commission. Requirements included a minimum (23) and a maximum (35) age, height/weight standards (minimum five feet, eight inches and 150 pounds) and previous law enforcement experience.

To strengthen and expand the Commission's education and information effort and increase fishing license sales, 10 new officers, in conjunction with the Civil Service testing, were hired. In November 1964, they attended the first organized Basic Training School of any duration for fish wardens. This training was conducted in a small building at Fisherman's Paradise, Centre County, and is now known as the H. R. Stackhouse School for Fisheries Conservation and Watercraft Safety.

In the 1930s, '40s and '50s, primary duties were enforcing the law and stocking fish. Until the early 1970s, wardens worked out of uniform and drove their personal cars for patrols.

The training consisted mostly of fish culture, fisheries management and public relations subjects. Some information included law enforcement procedures, but it primarily consisted of various stories involving past experiences of other wardens. Eventually, basic warden schools would create some improvements, but they still lacked much in technical law enforcement skills and other job-related subjects.

Events of the 1960s and early '70s dictated that times were changing, and if fish wardens (name changed to "waterways patrolman" in 1969) were to keep pace, training also had to change. These factors influenced the evolving officer training:

- The Commission placed more emphasis on enforcement of the environmental sections of the Fish Law, primarily pollution.
- Pennsylvania Rules of Criminal Procedure and the minor judiciary system underwent many changes.
- U.S. Supreme Court decisions, particularly on such issues as the Miranda warning requirement, search and seizure, arrest procedures, and rules of evidence, greatly altered older law enforcement methods.
- Boating was starting to increase steadily and became a more important function of the Commission.
- Civil lawsuits against police officers and agencies became "popular."
- Many new laws and regulations were enacted.
- Waterways patrolmen were given additional duties and responsibilities.

All these factors required an examination and reconstruction of training for Pennsylvania Fish Commission law enforcement officers, which were accomplished systematically.

Some training is certainly more important and takes longer than other training. Consider some of the training that's especially important.

Firearms

Although firearms use was always part of the total training program, it was haphazard at best. Officers were issued enough rounds to carry in their sidearms and sometimes enough to plink at tin cans when convenient, and sometimes even the luxury of a paper target. The most formal training consisted of shooting at bull's eye targets, using the one-hand, single-action method, which was unrelated to the way shooting incidents/situations actually occur.

Few, if any, scores or records were kept regarding proficiency of officers, and little thought was given to the classroom training aspect of when an officer may draw and/or use his weapon. In the early 1970s the State Police agreed to assist the Fish Commission with firearms training, and all waterways patrolmen attended formal training at the Pennsylvania State Police Academy, including classroom and more realistic range exercises. Requalifications still occurred only occasionally, and still the training did not include dim light or night fire exercises.

In 1979, to enhance the Fish Commission's Firearms Training Program further, eight waterways conservation officers were selected to attend a formal one-week Firearms Instructor School in Allentown. Since then, various policies and directives were created that have established a more definitive training agenda. Additional instructors have been trained and are used to train others, and accurate records of all training are kept. Today the training is as realistic as possible and is done at proper facilities including the Fish Commission's own range at its training facility in Centre County.

Why firearms training?

Although the total number of conservation officers in the United States is relatively small (less than 8,000), they are subject to a high assault rate each year. All hunters and many anglers carry a weapon of some sort. Officers often work alone in remote areas, and can enforce other criminal statutes. Thus, they carry firearms.

Carrying a firearm is a serious matter and includes much responsibility for its proper care and use. The use of a firearm for self-protection or to protect the life of another is a last resort, but when officers are properly trained how to use a weapon, they have more time to decide when they may use their firearms.

Law enforcement procedures

With the mandates set forth (case law) by the various courts, particularly the U.S. Supreme Court, officers need much training to keep abreast of the latest decisions and the parameters within which they may act in performing their duties. Procedural lapses can result in dismissal of cases. The most critical area of concern is protection of individuals' rights regarding an unreasonable search or seizure, and protection against self-incrimination (confession). Additionally, Pennsylvania Rules on Criminal Procedures as mandated by the Pennsylvania Supreme Court must be followed explicitly or cases could be dismissed because of procedural errors.

Boating, water safety

Because Pennsylvania Fish Commission officers spend much time near or on the water (in boats), it is very important that they know many special skills regarding boating and water safety. This includes boat operation (canoes to large outboards or I/Os), boat trailering, general boating safety and seamanship, boating laws and regulations, use of fire extinguishers, water rescue and ice rescue techniques, and boat accident investigations. Training for all these subjects begins in the classroom but then moves to the water so that officers learn by doing. They learn to put on a PFD while in the water fully clothed; practice docking, boarding boats and "locking through" river locks; practice ice rescues on the ice and/or through holes in the ice; and actually put out fires of various types to see the effectiveness or ineffectiveness of fire extinguishers.

In addition, our officers investigate the majority of serious boating accidents that occur in Pennsylvania. Unlike vehicular accidents on highways or streets where the vehicles are usually not moved and there are skid marks or tire tracks, boats involved in accidents rarely stay in the same place, and they leave no skid marks or "track." Victims and witnesses have usually left the scene long before an investigator arrives. Sometimes we have only a victim without witnesses. Special training in boat accident reconstruction and investigations is most helpful to the officer and helps to solve many cases and determine if what occurred was accidental or possibly deliberate.

Pollution, encroachment investigations

Officers investigate water pollution or stream encroachment incidents very carefully most of the time. Many pollutants, although colorless and sometimes odorless, can be harmful to fish, other aquatic life and to humans (the investigator). Special training is provided to the officer in the proper evidence-gathering techniques, preserving or "fixing" water samples, maintaining a chain of custody for evidence, photography, presenting the case in court, or working with violators to resolve the situation out of court.

On March 6, 1990, the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Training regulations came into effect for all emergency responders and caused significant changes to our emergency services and training. The regulation placed standards for training, organization and operations on hazardous-material spills. Presently, our officers are trained in recognition and identification of hazardous materials and the first-responder operations level for the purpose of protecting persons, property and the environment.

Training for today's officer

Today's standards for everything from entry-level testing to the course curriculum are different from what they were 50 years or even 20 years ago. It is not uncommon to have 800 or more applicants for a few waterways conservation officer positions (another name change). In a sense, the minimum announced criteria could be considered lower than they were in 1964, but through the various testing processes, we have been getting better educated and more physically fit applicants than ever before.

In 1978, after a thorough job task analysis, job-related physical fitness standards were produced. Instead of using height/weight and age minimum or maximum standards, physical and agility testing, based on job task analysis, were used to determine the fitness of candidates for performing waterways conservation officer duties.

Today's hiring and training process takes 18 to 24 months. The Civil Service Commission announces position vacancies and accepts applications for the written test phase (usually for about two months), and the written test is conducted statewide. All tests are graded, and then the top 100 to 120 candidates are given an oral exam, (two- to three-person board). The written and oral exam scores are combined and the Fish Commission is supplied with a certified list of eligible applicants by the Civil Service Commission.

The Fish Commission then conducts an in-house interview with the applicant and family, criminal history/character checks and another personal interview. After the final selection is made, the last test takes place at the Human Performance Laboratory at Penn State, where applicants must pass physical and agility tests and be able to swim continuously for 10 minutes or 250 yards.

Recent trainees

The most recent group of trainees was sent to the Pennsylvania State Police Academy to attend Act 120 Training (13.5 weeks). They then attended the Fish Commission's School of Fisheries Conservation and Watercraft Safety in Centre County for 13 weeks. From there they were assigned to field training for 11 weeks and then a final two weeks of formal training. The total time from start of the school to graduation last May was 39 weeks, or approximately nine months.

During this period every imaginable subject was presented. Some of those were: First aid, CPR, physical education, criminal justice system, firearms, evidence, search and seizure, arrest procedures, self-defense, rules of criminal procedure, crimes code, Drug and Cosmetic Act, driver training, public speaking, written communication, hazardous material spills, stocking procedures, patrol procedures, human relations, use of force, juvenile matters, investigations, media relations, typing, inter/intra agency cooperation, fish and boat laws, fishing and boating regulations, citation/field acknowledgement procedures, Coast Guard Auxiliary boating course, stream improvement, fisheries management, fish culture, criminal complaint procedure, fish identification, amphibian and reptile identification, endangered species, basic water safety, basic water rescue, two-way radio operation, PR-24 instruction ("night stick"), boat accident investigation, permit reviews, boat operation, pollutions, wetlands and encroachment investigations, basic fishing, fly tying, paperwork management and other related subjects.

Sounds like enough training for anyone, but it doesn't stop there. Officers now must undertake the task of getting to know intimately the district to which they are assigned. Our most experienced officers estimate that this takes at least three to four years. Aside from this, training is a continual process. Officers must attend in-service training each year. This is conducted by the Bureau of Law Enforcement and may contain some new subjects, but also includes the yearly recertification in firearms, CPR, First Aid and PR-24. Additionally, periodic meetings are held regionally to keep officers current on the latest Commission policies and regulatory actions. Officers are notified by mail of changes in laws, regulations, rules of criminal procedure and policy if there is an immediate reason to know.

Most newly hired officers are bewildered by the voluminous amount of paperwork required for the job. Most thought that they would become another "Mark Trail" and spend the vast majority of their time outdoors. Although they spend more time outside than most occupations permit, the government still requires paperwork and lots of it. Almost every action taken by a conservation officer must be documented. If someone is cited for a violation, it requires paperwork, usually the more serious the violation incident or accident, the more paperwork required.

Officers spend much time completing reports for various actions they take, but also for the required bi-weekly and monthly reports, such as time and activity reports and automotive reports. Officers soon will be required to learn certain computer skills that will aid them in completing many of the required reports and in transmitting this data to regional offices.

Benefits of training

What are the benefits, if any, derived from the expensive, comprehensive and lengthy training? The angler, boater or other resource user has working for them someone who is both mentally and physically prepared to protect and preserve Pennsylvania's abundant aquatic resources and provide boating safety services. The officer is also someone who is a skilled communicator, able to educate children and adults alike on environmental matters, and the need to obey established laws and regulations. We believe our training program produces this type of individual.

The future

Predicting future requirements is difficult, but we believe tomorrow's officers will require even more training than those of today—the extent of which will be determined by factors including the Commission's overall mandates, public demands, legislative demands, adequate funding and sufficient training staff. The Commission needs well-trained, professional officers and the public expects and deserves nothing less.

Edward W. Manhart is Chief of the Commission Bureau of Law Enforcement.

Dan Martin

BECOMING A WATERWAYS CONSERVATION OFFICER

Usually there is intense competition for the few WCO positions that become available. These are Civil Service positions.

Anyone interested in becoming a conservation officer should contact state employment offices or the Civil Service Commission, or watch newspapers. Job announcements are usually made about every three years.

College degrees aren't required, but most successful applicants now have college degrees, usually in related fields such as biology, wildlife management or law enforcement.

Opportunities are few, but the job is quite rewarding—most officers usually stay on the job until they retire.—*EM*

Dan Martin

The 1991 graduating class of WCOs—more thorough training than ever before.

Bureau of Law Enforcement

Enforcing pollution laws requires special training.

Ice rescue is part of today's WCO training.

Today's officers undergo extensive boating preparation.

City SMART

by Kelly F. Countouris

City "SMART" kids learn to make the most of their environment.

Bobbers and worms, rods and reels, bluegills and bullheads, hula-hoops and SMART kids. Fishing and learning, fun in the sun, Fish Commission and CitiParks, water and smiles.

Do you know what these items share? They are parts of the Fish Commission's Pittsburgh Urban Fishing and Education Program.

The Fish Commission developed and piloted the Urban Fishing and Education Program in the summer of 1990. It was so successful that it was expanded this past summer. During both years, sessions were held at Lake Carnegie in Highland Park and were run in conjunction with Pittsburgh CitiParks.

The program received federal funds through Federal Aid in Sport Fish Restoration. Rods were donated by the Berkley Corporation and reels were compliments of Zebco. The Commission supplied bait, instruction and other program materials. Urban Fishing and Education is a program that teaches youth aquatic ecology, conservation and basic baitfishing skills. It is just one component of the Fish Commission's overall KARE program (see related articles on pages 13 and 16). The program was designed for youths aged 8 to 12. Sessions were held from June through August each summer. They lasted two hours and were limited to 30 children per session to maximize personal attention.

This program reached 321 children during the summer of 1990. Ninety-one percent of these children were from within the city limits, slightly more than half were black, and nearly two-thirds were male. During the summer of 1991, the program was expanded to reach over 600 children and

Kelly F. Countouris

offered more advanced sessions. Again, the majority came from within the city limits.

The goals of the Urban Fishing and Education Program for both summers included (1) teaching children the basic skills and techniques of baitfishing and how to fish safely, (2) instilling in them a sense of concern and responsibility toward resource use and other anglers, (3) presenting basic aquatic ecology and conservation concepts, and (4) helping the children become familiar with the Pennsylvania Fish Commission.

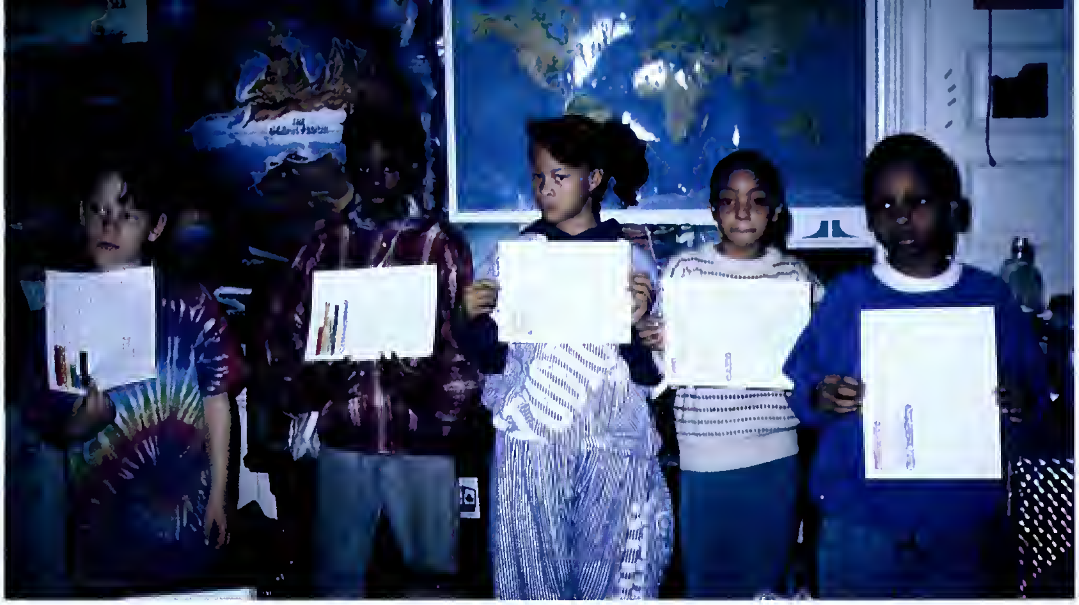
In addition, the 1991 program included instruction in more advanced fishing skills and an overview of Commission fisheries management techniques. The program helped city children learn more about aquatic resources and which natural resources were available "in their own backyards." While aiming the program at urban youth, children from outside the city were not excluded from participating.

Program goals were met through several means. The educational segment of the program focused on the concept **"Be A SMART Angler."** This concept, or message, was presented to the children on a display board. Each letter in the word **SMART** stood for ideas or actions that the children were to learn to be intelligent, or "smart," anglers. S—Safety first. M—Manners are important. A—Appreciate clean water. R—Return your catch. T—Teach others to be SMART anglers.

To accompany and reinforce the **SMART** concepts, cartoon drawings that were both comic and serious were used for each letter. The **SMART** concept was developed and used to convey concern and responsibility for natural resources and for other anglers. It was also used to discuss aquatic ecology and conservation.

For example, discussing conservation was a large part of the program, so teaching the children the **"R"** (Return your catch) in **SMART** was very important. During this time the children were informed that if they could catch two fish, they could keep two fish, but that the third fish would have to be returned to the water. Commission staff then discussed the meaning of the word "conservation."

Children were then asked a series of questions designed to help them decide whether to keep a fish or release it. Questions focused on the size of the fish and what it would be used for, as well as what would happen to the fish if it were released. In this manner, the children were taught to think for themselves and to reach ethical decisions based on consideration of the resource, their own needs and the future.



Following the presentation of the **SMART** concept, a poster was displayed that depicted various panfishes of Pennsylvania. Then a plaster cast model of a brown bullhead was brought out and placed on the display board next to various external anatomy labels. Children assisted in labeling the fish. As each label was matched to its proper part, an explanation of its function was given.

To conclude the education and instruction segment of the program, staff displayed a rod similar to what the children would use. They then demonstrated how to secure a hook and how to cast and reel in the line.

After the education and instruction segments, one of two activities was performed. Certain mornings Fish Commission staff from the Linesville Fish Culture Station arrived with 200 to 300 panfish. The children participating on these days would then stock the lake by carrying the panfish (a mix of bluegills, black crappies, yellow perch and brown bullheads) in buckets from the stocking truck to the lake for release. If the session was a non-stocking session, the children would play a game called "Go Fish." This game focused on habitat that aquatic life requires and the lifecycle of fish.

Following these activities, the class was divided into small groups for casting practice. Children were placed in lines opposite a hula-hoop and were given rods with bright-yellow practice plugs attached. They used the hula-hoops as targets. Practice continued until all the children had mastered the skill of casting. During this practice, Commission staff were able to help the children individually and give advice as necessary.

Actual fishing took place after children had mastered the skill of casting. Each child was given a rod with hooks and bobbers already attached. Commission staff then demonstrated how to bait the hooks with nightcrawlers. Those children who knew how to put the worm on the hook were encouraged to do so, and those who did not know how were helped. Fishing lasted approximately 50 minutes with Commission staff and group leaders circulating among the children offering help and advice.

To conclude the program, the rods were collected and the children were given wrap-up sheets to complete. The sheets asked the children to describe any fish or insects they had seen that day and to fill in the meaning of **SMART**. Finally, the sheets had the children draw and label a picture of a fish. Commission staff assisted the children with the sheets and used this time to monitor how much of the educational material learned earlier could be recalled. Finally, the children were given a prize before departure.

The Pittsburgh Urban Fishing and Education Program was designed to be a high-quality educational and fishing experience for urban youths. In creating this program, the Commission did not want to have large numbers of children simply show up and fish. Rather, the Commission wanted the children to participate in a controlled situation where learning and fun went hand in hand.

From all accounts, the program has been a great success. Positive responses were heard from group leaders and their staff, from parents with children in the program, and from individuals in the community. Many of the group leaders and parents personally told Commission staff they "hoped the program would be continued in the future," and that it "filled a real need."

The Urban Fishing and Education Program is not only a positive experience in relation to fishing and education, but it also teaches urban children how to make the most of their environment. Adults and children left the program commenting that they never realized there were fish in areas like Lake Carnegie. Many also said they would be back to fish the lake again!

WHO TAUGHT

Bruce Ingram

YOU?

Bruce Ingram

When did you learn to fish or boat, and who taught you? When we consider how we learned to fish or boat, we can understand more clearly the influences that shaped our current fishing, boating and conservation ideas. When we see how others learned, we can grasp how best to teach others, and we can show them more pointedly which fishing, boating and conservation values we want to pass on.

Think about who taught you, and read here how others learned.

I practically grew up in a boat. With three generations of boatbuilders in my family, it would have been hard not to do otherwise. My grandfather started his own "boat shop" about 50 years ago on the northern shore of Lake Huron, repairing and rebuilding the mahogany Chris-Crafts, Hacker-Crafts, and other inboards originally built in the 1920s, '30s and '40s. Grandma kept the books, and my dad and uncle both worked there on the boats—a real family business.

Today, my uncle and brother own the shop, my nephew works there during his summer college breaks, and my mother runs the office. What started as a "one cat-walk dock" operation is now a booming pleasure-craft restoration business with customers from around the Great Lakes states and across the country.

As a child, one of my biggest thrills was going with dad in the "work boat," a homemade inboard named after my brother and used to get to the boats needing minor repairs at the island cottages of the area "summer people." He would almost always let me steer, and from him I learned about staying between the red and black channel markers, using the throttle, where the points and shoals from the islands were, why the lighted buoys were there, and how to dock without making Grampa angry! One of the most exciting trips was to set up a watercade course for the arrival of our governor. The old workboat was decked out in flags and never looked so good! What a treat for a kid!—*Kim Mumper, Keystone Aquatic Resource Education Coordinator, Bureau of Education and Information.*

My first memories of fishing were with my father. We were wading in Tuscarora Creek near Port Royal, using spinners to catch rock bass, sunfish and smallmouths, probably in the summer of 1959. I remember doing well, catching many fish. I also recall cutting my hands on the dorsal fins of rock bass and sunfish when I was taking them off the hook for release.

One of Dad's first commandments had to do with releasing fish. He taught me to wet my hands before I handled the fish and to release them quickly to minimize danger. Dad never kept many fish. He was a firm believer in catch and release, though he never criticized people who kept fish to eat.

I still fish in Tuscarora Creek and it continues to be an excellent spot to take beginners because of it's fine panfishing.—*Dan Martin, Boating Education Specialist, Bureau of Boating.*

For as long as I can remember, I have been fascinated by water. As a child, I swam in it, swallowed it, slopped in it and poured it over my sister's head. It was my father who taught me to fish in it.

Because of him I gained a healthy respect for fish hooks, mud between my toes and the surprising strength of the smallest sunfish on the end of my line.

However, the fish's journey from pond to skillet involved a couple of things I hadn't counted on: standing still and nightcrawlers.

To that point, I had spent much of my eight years amusing myself by dressing my dolls and yellow tiger-cat in doll clothes. When the tomcat, who was not amused, tore off in full regalia, I played in the dirt under our shrubbery. Occasionally I would uncover a grub or small earthworm, but never these linebackers of the worm world my father now expected me to thread onto my hook. I thought they were snakes!

Following his patient example, I overcame both hardships and was rewarded by the tugs of a hungry farm-pond bluegill. So marvelous to me was every scaled, iridescent inch of my first fish that he "grew" a little each time I told the story. My dad said I was well on my way to becoming a first-rate fisherman.—*Bonita C. Hoke, Executive Director, Pennsylvania Federation of Sportsmen's Clubs, Inc.*

Even though we lived on a lake, no one in my family fished much, so I had never been interested. When I was about 10, friends of the family came out one summer evening to fish. The father insisted on showing me how to fish from shore. He carefully baited my hook with a worm and tossed it out. He told me to keep my eyes on the red bobber. It wasn't too long before it started bobbing. I squealed and he told me to jerk when the bobber went all the way under. Well, I jerked so hard I fell backward. Was I excited to see that rod bend! With his coaching I reeled in a nice-sized catfish. I was "hooked" on the fun of fishing—especially catching fish.—*Cheryl Riley, Director, Bureau of Education and Information.*

I was born and raised in Ironwood in the upper peninsula of Michigan. That provided the setting and opportunity to develop my fishing prowess at a young age. I was blessed with parents and uncles who were ardent fishermen. Being surrounded by them enhanced both the opportunity to fish and the needed hands-on training to become proficient.

At the tender age of four, my parents introduced me to trout and panfishing. The cane pole with nylon line, thermos cork bobber, homemade sinkers and store-bought hooks rounded out my first real fishing pole. My uncles taught me at age six to troll and cast for bass, pike, pickerel, walleye and muskies. Learning not to get backlashes tested their teaching ability and patience. Soon the skills were acquired. I am indebted to my family for making fishing fun.—*Larry Hoffman, Fish Commission Executive Assistant.*

I and my brother were taught to fish by our grandfather, Elmer E. Moore. We learned to fish when we were about five or six years old. My grandfather would take us to the Lehigh River, which flowed through his front yard, when we visited on our vacations. He showed us how to dig for worms as well as pick them from his lawn after a heavy rain. He almost always fished with worms, but sometimes he used spinners. I learned to fly fish using his old fly rod and some nondescript fly patterns. Almost all the fish we caught were fallfish, cutlip minnows, or common shiners, with an occasional bullhead or chain pickerel. My brother and I rarely caught trout, but my grandfather could usually get one or two on our outings.

I'm happy to say as he got older I was able to be the one who was able to take him fishing. I helped him land his last trout in front of his house when he was 82.—*Bob Wilberding, Fisheries Technician, Cooperative Nursery Unit.*

In the early 1960s I was formally introduced to trout fishing by two gentlemen—Jim Brooks (now deceased) and Carl Spotts, both of Centre County.

I got to know Jim when he tutored me in math throughout my high school years and spent a lot of time taking me on fishing trips to Black Moshannon Creek, below the confluence with Benner Run.

There he taught me how to fish minnows and grasshoppers to take the nice brown trout from the dark, tea-colored waters.

Carl owned a local service station that my dad frequented and later in high school I did odd jobs at the station. He introduced me to fishing for native brook trout in Wallace Run and Benner Run, teaching me how to approach the crystal-clear water so I wouldn't spook the fish and how to get the bait into the right spot for the catch.

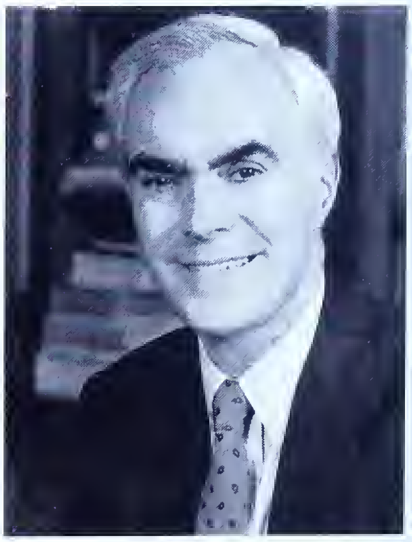
Carl also gave me my first fly rod, an eight-foot Wright & McGill, split bamboo, making it easier to get to those choice spots.—*Cecil Houser, Chief, Cooperative Nursery Unit.*

When I was about five years old, my next door neighbor, Ed Sproesser, who was like a father to me, would go to the Susquehanna River on the Conowingo Pool and fish for channel catfish. He would come home with the channel catfish and I always thought that was neat to be able to go fishing and catch these fish. He would bring maybe half a dozen to a dozen channel catfish home and he had a shower in the basement of his home. He would stuff up the shower drain and fill it with about six inches of water and put the channel catfish in the shower. Today adults ask me how you grab a channel catfish. He taught me how to grab a channel catfish out of the water and hang on to it without getting stuck by the spines. So I got interested in these channel catfish and I wanted to know how to catch them. He said that he would take me to the Susquehanna River but it was dangerous to fish there because he fished on a rocky area and before I could go fishing with him I had to learn to swim. So that was the stimulus then for me to learn to swim. The eventual outcome of all this was that these channel catfish, which I would play with in the shower Saturday afternoon or Sunday morning, we would eventually stock in a little lake called Carsonia Lake, which is a community pond in the suburbs of Reading. So those were the first "stockings" I ever did, which is part of the job of a fisheries manager.

That's how I got interested in fishing and to this day I have an emotional attachment, I guess you would call it, to channel catfish and fishing for channel catfish and also to Ed Sproesser, who, if it hadn't been for him I probably wouldn't have learned to fish. And he took me fishing from the time I was six years old until I was a freshman in college about half the weekends of the year on the Susquehanna River.—*Mike Kaufmann, Area Fisheries Manager.*

Opening day was always dark and cold, and snow flurries frequently flew when I was first exposed to fishing. I was only six on the first trip, but each year my Dad and I spent Friday night at my uncle's cabin on Spring Creek, Centre County, and we were on the stream at about 5 a.m. on opening day. Our country was involved in World War II for these first years, so most fishermen stayed close to home because of gas rationing and other shortages. Spring Creek offered excellent trout fishing and it was heavily used by local fishermen.

My Dad was not an "expert" fisherman, but he was successful teaching me how to enjoy myself and catch an occasional fish. These fishing trips with my Dad are my fondest memories of the limited time we were together, and they helped develop the life-long interests I continue to treasure.—*Edward R. Miller, Executive Director, Pennsylvania Fish Commission.*



Fishing's been part of my life since I was a teenager. I can't remember anyone teaching me how to fish. I just started doing it with my friends at Lake Henry in Maplewood, Wayne County. Now I do most of my fishing at Lake Ariel where we have a summer house, not too far from Maplewood.

I'm a bass fisherman, but I've caught plenty of sunfish and pickerel as well. My best fishing buddies are my sons. Sometimes we'll go out early in the morning, but my favorite time to fish is at dusk. From the boat or dock, either casting or still-fishing, it's a sport I really enjoy. I like to golf, too. On the other hand, fishing is more fun. For me, fishing's the best part of a warm, summer day.—*Governor Robert P. Casey.*

THE BASIC FISHING SKILLS PROGRAM

by Kim Mumper

Mark Dauberman

Fishing is a great way to learn about the environment, and KARE is now developing a basic fishing skills program designed to introduce children to fishing, the importance of clean water, and the safety considerations and ethics needed to enjoy this pastime.

The KARE staff is now recruiting those who are interested in becoming basic fishing skills workshop facilitators. These individuals should have a background in a variety of fishing experiences and also in teaching others, whether in a classroom or informal setting.

"Skills facilitators" will be trained by the KARE staff to conduct workshops for those who wish to become "skills instructors"—those who will introduce children or adults to fishing. Camp counselors, park naturalists, scouting and other youth leaders are some of the people who might be interested in the instructor workshops. These people may or may not have previous fishing experience.

The children will be taught by the instructors in a variety of settings, but the messages conveyed will be much the same. Groups of children will be taught about different types of fish, fish habitats and requirements, safety around the water and with equipment, outdoor manners and ethics, and the need to protect the water and use it wisely. And of course, everyone will learn how to fish: how to bait a hook, how to cast, how to land a fish, and why releasing the catch can be a good thing to do.

The benefits of such a program are greater than bringing new anglers into the ranks. Many children today spend so much time in front of a computerized game or the television. Instead of being outdoors, their only "nature experiences" may come from the TV. Introducing children to fishing means introducing them to dragonflies, worms, bluegills, catfish, some dirt, and a lot of water—sometimes a bit too much! It means introducing them firsthand to real, working "habitats" and "food chains," instead of a worksheet depiction in a text book. And hopefully it means starting or further developing a life-long concern for the environment on which we all depend.

The first skills facilitator training course is tentatively scheduled for March 1992. After a weekend of "how-to's," these facilitators will schedule and conduct instructor workshops in their communities in the spring and summer of 1992. Children should begin to benefit from the program by mid-summer.

Every kid participating in a KARE basic fishing skills instruction session will be introduced to the aquatic world—and every kid will get to fish. After all, isn't that how it all begins?

CARE ABOUT CLEAN WATER
KARE
Keystone Aquatic Resource Education
PENNSYLVANIA FISH COMMISSION

Making a Difference

by Cheryl K. Riley

photos by the author

I recently made a presentation to a national group of conservationists who had assembled for their annual convention. I asked how many of them attributed their love of the outdoors and their involvement in outdoor activities to a particular person in their childhood. Most of the room of 200 people raised their hands.

As a reader of *Pennsylvania Angler*, you are no doubt a fan of fishing and probably other outdoor pursuits. Think back to your childhood. Did someone introduce you to fishing? Your father? Maybe your grandfather or grandmother—or both? A neighbor? Do you recall those first experiences? Did they make a difference in your life and what you do when you want to get away from it all?

I was an adult before I spent much time enjoying the outdoors and exploring the many wonders of nature. I realize now that I missed out on a lot. As I grow older, it is the outdoor experiences that provide the most special memories. Time outdoors continues to awaken my senses and still leaves me with unforgettable memories.

What's even more fun is to share the outdoors with a youngster. I first met Kate almost four years ago when she was 10 years old. She and I were matched in the Big Brother/Big Sister program. Kate knew little about the outdoor world beyond her neighborhood except for what she had seen on television or read in books. She was one of the most curious kids I had ever met.

Get involved with the young people you know and share some special moments outdoors.

To celebrate her 11th birthday we went camping at Reeds Gap State Park. I don't think she slept a wink all night and was convinced the raccoons were going to carry off all our gear. One of the staff knew of a good pond full of bluegills, so we went fishing and she caught four fish, throwing back two and keeping two to eat. We took walks in the woods. She saw the ocean for the first time and she taught me about ghost crabs (she'd seen a special on TV). We visited Cook Forest and canoed the Clarion River.

When we were together in the outdoors, we'd talk about the things we saw and did and what it means to take care of our world. She was always surprising me with how much she absorbed and what she remembered. On one camping trip to Assateague, Kate became quite upset at campers who left behind a messy campsite. She asked me to stop at the park office on the way out so she could report them. I hadn't even thought to do that!

I wonder what kind of memories many youth of today will have as they grow up. Will they share any kinship with the natural world? Statistics tell us that most of their experiences are urban-related. Although Pennsylvania is mostly rural, 70 percent of its people are urban and that percentage is increasing. What about the couch potatoes glued to their TV sets? On the average, Americans spend over seven hours a day watching television. No wonder people don't get outdoors.

Who is there to help our youth learn about the natural world? It's hard for parents because they're busy working. An American Fishing Tackle Manufacturers Association survey revealed that among adults who fish, only 20 percent have a child who also fishes. Daddies aren't taking their kids fishing anymore; moms aren't, either. So who will?

That's where you and I come in. Those of us who love the outdoors and cherish our opportunities to fish, hunt, camp, hike or watch wildlife MUST make sure we are sharing our experiences with tomorrow's generation.

As a parent, when was the last time you shared a few hours with your children in an outdoor activity that was fun? Remember the people who took the time to teach you? Is life REALLY that busy? If you're a grandparent, your grandchildren might look to you for the attention they can't get from their harried parents. With the demands of the parenting years over, you can now share the most precious gift of all—TIME.

A friend whose kids are grown makes it a personal goal of his every summer to take two children fishing who have never fished before. And another friend made a new year's resolution to take the little boy next door fishing. His mother, like many, is raising the family alone and has other things on her mind.

It doesn't take a lot for us to make a difference in the life of a child and to help that child understand the importance of conserving our natural resources. Urban youth don't have to spend all their time in malls, but sometimes they need someone who cares enough to involve them in other activities. Even though group activities such as scouting and 4-H are great ways to introduce youth to the wonders of nature, nothing can beat individual attention.

Why not think about the young people you know in your community, your neighborhood, your church. Get involved with one of them and share some special moments outdoors. Relive the things you enjoyed when you were young and which instilled in you a respect for nature. I'll bet you'll receive far more in return for the time you give. And you'll be making a difference.

Cheryl K. Riley is Director of the Fish Commission's Bureau of Education & Information.

Those of us who love the outdoors and cherish our opportunities to fish, hunt, camp, hike or watch wildlife must make sure we are sharing our experiences with tomorrow's generation.

“Keep up the Good Work”

by Kim Mumper

“Excellent materials and activities! Instructors were great! Thank you for providing this program!”

“This is definitely the best workshop I’ve ever attended! It is rare to get so many resource materials let alone get so much practical use and get to feel comfortable with them right on the spot.”

“I liked the identification and collection of actual living species and the on-site water testing.”

“One of the best for materials that are usable. Keep up the good work.”

“Very interesting workshop. Appreciated the hands-on approach and the chance to instruct a brief lesson.”

“Workshops like these are always worthwhile when participants have to prepare, plan and carry out lessons or activities. I enjoy learning hands-on. Good presenter.”

“I thought this workshop was excellent. All the information and materials I obtained were great. I would strongly encourage others to attend this workshop.”

These comments and others give an indication of the continuing success of the formal, or “teacher education,” portion of the Keystone Aquatic Resource Education program—KARE. The statements were taken from the evaluation forms completed by teachers after they had participated in a 15-hour workshop. What makes the program such a hit?

Materials

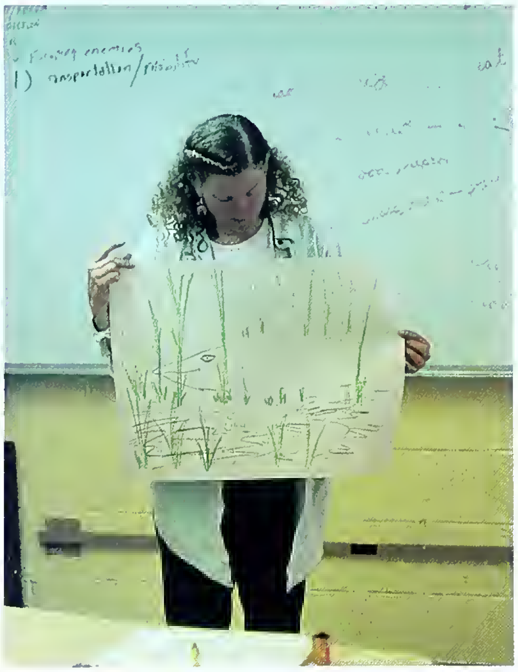
In these days of budget cuts in just about every aspect of educational programs, teachers know a good deal when they see one. The materials they receive by attending a KARE workshop are an especially good deal. Each teacher is given a set of activity guides—books full of information and ideas for teaching water-related topics covering all grades and most subject areas.

Water Resources in Pennsylvania was developed by the Fish Commission in response to the expressed needs of teachers around the Commonwealth for information and activities on Pennsylvania-specific things: streams, lakes, rivers, ponds, wetlands, acidic deposition, water pollution and wildlife. This book was designed specifically for use in the junior high school grades, but the information can be useful for any grade level. *Water Resources* is currently being revised, and in addition will have an new section in early 1992 especially for the primary grades.

Living in Water was developed by the National Aquarium in Baltimore for grades four through six. The activities in this book focus on the properties of water and how living things in both freshwater and saltwater are adapted to those properties. Students involved in these lessons learn about density, surface tension, the refraction of light, animal camouflage, water habitats, fish migration and population cycles.

Aquatic Project WILD is probably the most well-know of these materials. It is the aquatic supplement to the popular Project WILD (distributed through the Game Commission). Aquatic WILD activities stress developing awareness, appreciation and responsible action toward aquatic resources. Creative lessons teach about the uses—and misuses—of aquatic wildlife and habitats. Students might find themselves sampling the living things in a stream, drawing life-sized whales in a parking lot, or imitating migrating salmon. Students and teachers of kindergarten through the twelfth grade will find learning about watery wildlife fascinating and enjoyable.

Any teacher who has completed a KARE workshop is entitled to receive classroom quantities of the Fish Commission’s Pennsylvania League of Angling Youth, or PLAY, newsletter. Originally designed to answer the fishing questions of upper elementary school-aged children, PLAY can now be used to supplement reading, math and science lessons, and lessons on other subjects in the classroom. An instructor’s version accompanies the quarterly issues, which contain stories, puzzles, games, and of course, fishing tips!



“Hands-on” activities

Each of the activity guides in the KARE package of materials described above stresses hands-on, or “get that kid involved” activities. When people learn by doing, they discover for themselves what makes a thing tick and so are more likely to remember. This is as true for adults as it is for children. In promoting activities that get children actively involved in learning, allowing the teachers in a workshop to learn about the activities by doing them makes sense. Sometimes the teachers function as classroom students and build the model or sample the stream or draw the whale. At other times, they lead the other participants in an activity.

In a recent study conducted by the national sponsors of Project WILD, over 80 percent of those who had taken a workshop and had participated in the activities had used the materials in classroom teaching situations (as opposed to using them as dust-catchers on a bookshelf). This was compared to those who had simply received the activity guide in the mail—only 20 percent of those people were using their materials. Why? The people in the first case learned by doing and became more comfortable using the materials. Because of this, they were more likely to use the teaching materials they had received.

Presenters

The heart and soul of the KARE program are the presenters—the workshop facilitators. In everyday life, these people are themselves teachers, principals, naturalists, park rangers, newspaper writers and university professors. They have a wide variety of outside interests from singing opera to running marathons, from sailing to traveling to exotic places, from working with relief organizations to engaging in award-winning photography. During a KARE workshop, the facilitators bring their knowledge, personalities and concern for the environment to the classroom to create a comfortable, enjoyable learning time for the teachers involved. A workshop in Hollidaysburg will be somewhat different from one in the Poconos, or in Pittsburgh, or at State College. Each person or team of facilitators tailors the workshop to the local issues and resources and to meet the needs of the people attending. Depending on where the workshop is held, the workshop could focus on anything from Lake Erie to the Susquehanna, from wetlands to the Three Rivers. But no matter where a workshop is held or who runs it, the participants receive a well-rounded look at the activities they can use in their classrooms with their students.

The formal, or "teacher education," portion of KARE gives instructors the materials and methods they need to work with groups and individuals.

The teacher workshop portion of KARE celebrated its second anniversary last June. In those two years, over 1,200 educators took part in these workshops. Their comments and those of the facilitators have helped to shape the program. The expressed needs of teachers have helped the education staff of the Fish Commission develop and strengthen the KARE program. In turn, KARE can assist teachers across the Commonwealth in developing and strengthening the awareness and responsible behavior of young people toward the aquatic resources of Pennsylvania for the betterment of all.

Interested in KARE?

Complete this form and mail to: **KARE Coordinator, Pennsylvania Fish Commission**, P.O. Box 1673, Harrisburg, PA 17105-1673.

Name: ______________________________

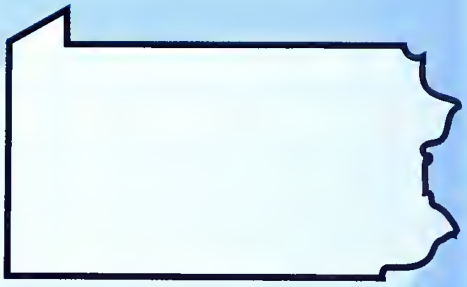
Mailing Address: ______________________________

City, Zip: ______________________________

School (if applicable): ______________________________

I'm interested in ☐ teacher workshops (also available to other educators and pre-service teachers).
☐ becoming a fishing skills workshop facilitator (training instructors).
☐ becoming a fishing skills instructor (teaching kids and others).

Boating Education Issues for Pennsylvania



Ben Moyer

Increasingly more crowded waterways require all boaters to **know special skills of courtesy, safety and operation.**

Art Michaels

There are many types of boating opportunities available to the public in Pennsylvania. A 1987 survey indicated that over 2.5 million people participate in some type of boating activity annually. This represents one out of four Pennsylvanians over the age of 12. The number of boaters plying Pennsylvania's waterways continues to increase. The public and private boating waterways of the state are becoming more crowded each year. Every type of craft imaginable, from high-speed offshore race boats to canoes, can be found on one waterway at the same time.

Since 1981, boat registrations have increased from just over 188,000 to nearly 287,000. This increase in the number of boats and boaters has resulted in congestion and conflict on numerous waters, accompanied by dissatisfied boaters and an increase in complaints. Although there are major differences in the use and operation of various types of watercraft in the state, there are common rules for the safe and courteous use of Pennsylvania's waterways. As boating diversity increases, it becomes necessary to ensure that boat operators are aware of all the obligations they have for the safety of their passengers and other boaters. Observing navigation rules and equipment requirements, learning to share the available water areas safely and courteously, and cultivating respect for the aquatic environment are all necessary to the health and welfare of the general boating public.

The Fish Commission is, by law, charged with regulating boating within the Commonwealth and has provided boating safety education to boaters on a voluntary basis since 1964. The existing setup of volunteer instructors in outside organizations is functioning to educate large numbers of the boating public. However, existing programs are not currently available to all Pennsylvanians. It is difficult to offer boating safety education in an equitable manner throughout the Commonwealth.

There are currently several continuing boating safety education programs in which the Pennsylvania Fish Commission is directly involved. The Commission operates these programs primarily through instructor training.

The **Boating and Water Safety Awareness Program** is a youth boating course and is approved by both the National Association of State Boating Law Administrators (NASBLA) and the Pennsylvania Department of Education. Each year, some 2,500 students complete this eight-hour hands-on course. Course time includes in-water training so students can practice swimming while wearing PFDs, paddling swamped boats to safety, rescuing people in water emergencies, learning hypothermia prevention techniques and simulating self-rescue in currents and waves. Classroom topics include required safety equipment, boat operation, environmental concerns, alcohol abuse, accident prevention and small-boat safety. After instructor certification, the instructors are provided with materials needed to teach the program effectively. Boating equipment is also available on loan for instructors.

The **Water Rescue Program** is designed to train fire and rescue personnel in the most up-to-date techniques of boat rescue and water safety. Through appropriate adaptation, the course can also be used by police departments, park services or any boating and water safety organization. There are three phases to the program. Phase I is Basic Rescue Preparedness, Phase II is Boat-Used Rescues and Phase III is Special Rescue Situations, which includes four modules.

Once certified by the Commission, instructors are then able to train their own departments in the basic water rescue program. The Commission's water rescue course is the accepted core course for the National Association for Search and Rescue, which teaches a similar Phase I course nationwide.

The Fish Commission is revising the **Pennsylvania Basic Boating Course.** A new course, with a new text and lesson plan, is being developed. This is an eight-hour course broken down into eight one-hour segments. It is designed for classroom instruction through schools, parks, recreation departments and adult education programs. The purpose of this course is to provide a program that can be taught easily in any location. Instructors need not be boating "experts." Anyone familiar with boating or instruction techniques can easily follow the lesson plan.

Education is one of the primary functions of the Coast Guard Auxiliary. The Auxiliary teaches more approved boating courses than any other organization in the Commonwealth. The Auxiliary's main boating safety course is "Boating Skills and Seamanship." This NASBLA-approved course varies from a core course of six lessons (12 hours) to a more comprehensive one of 13 lessons (26 hours).

The most likely way to ruin a boater's day on the water is another boater in the same area improperly operating a boat.

The Commission supports the Auxiliary in its public education efforts by providing lesson plans, accident information and analysis, films and video tapes, and publications. Tens of thousands of boating safety pamphlets are distributed by the Commission to Auxiliary instructors each year.

The U.S. Power Squadrons provides a public boating course, "Sail and Power Boating," which is offered twice annually to anyone 12 years of age or older. This course is NASBLA-approved and is similar to the BS&S course offered by the Auxiliary.

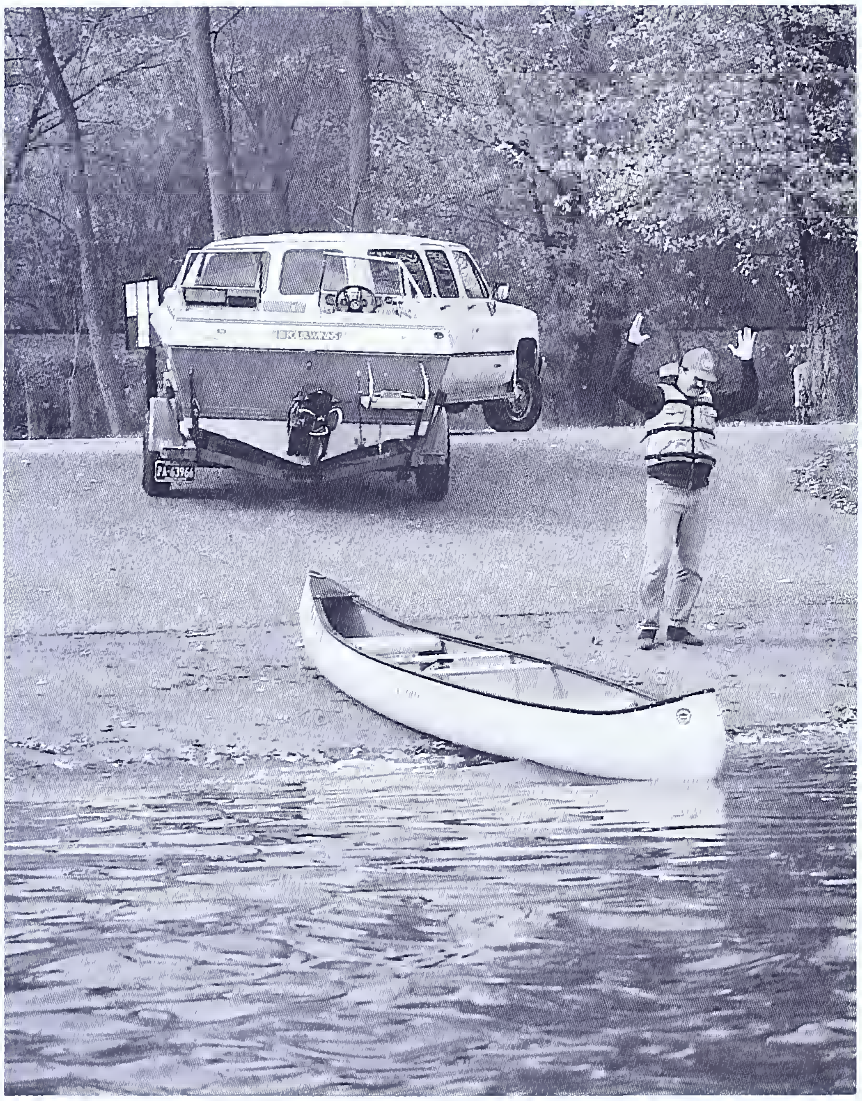
The Commission supplies the USPS with boating accident information and analysis, films and video tapes, and publications for its public education classes. As with the U.S. Coast Guard Auxiliary, the Commission maintains a close liaison with the USPS.

There are barometers useful in measuring the boating safety situation in the Commonwealth. They are the boating accident fatality rate, waterway congestion and user conflict. Congestion and conflict are more subjective measurements than the fatality rate. Congestion, to a degree, is a matter of an individual boater's perception. Conflict depends largely on the boating activities taking place. Add an inconsiderate boater or two to the water and it doesn't take much to create conflict or the perception of congestion. The most likely way to ruin a boater's day on the water is another boater in the same area improperly operating his or her boat. This is particularly true on some of our more congested waterways. The primary concern for most boaters is knowing that the boat operator coming at them has some knowledge of the rules of the road and is paying attention.

Many people view mandatory boating education as a possible solution to reduce boater conflicts and improve boating safety. Mandatory boating education means that an approved boating course must be successfully completed (usually by boaters in a defined age group) before operating a boat on state waters. An "approved" course is one sanctioned by NASBLA. Such courses must be a minimum of eight hours and must cover a diverse array of boating topics and safety subjects.

Another factor that affects the implementation of a mandatory program is the occurrence of a high-profile accident. The publicity and discussion following a high-profile boating accident tends to be highly emotional. Following such tragedies people look toward the government to step in and prevent accidents through some type of mandatory education program. As congestion and conflict increase, so does the pressure for stricter regulations, more enforcement and a mandatory education program.

Pennsylvania currently has no requirement for mandatory boating education, and the Fish Commission has not yet taken a stand on the issue. Nevertheless, to cooperate with other states that do have such programs, the Commission has implemented a voluntary certification system. Anyone who has completed an approved boating course can be certified by the Commission. Because Pennsylvania's certification system is accepted by other states, it frees boaters in applicable age groups from being forced to travel outside Pennsylvania to take a lengthy boating course. It also identifies the Commission as the boating safety agency in Pennsylvania and sets up a workable certification system in case mandatory boating education becomes law.



Will education solve conflicts among boaters?

Is mandatory education the answer?

Art Michaels

The presumption exists that a boater who successfully completes an approved course is a more knowledgeable and safer boater, thus reducing accidents and conflicts on state waters. Though data is incomplete, it is very rare for anyone involved in a fatal boating accident to have any formal boating education. In fact, in the last 10 years, only seven of the boaters involved in the 181 fatal boating accidents in Pennsylvania had completed a NASBLA-approved boating course.

Three of our neighboring states, New Jersey, Maryland and New York, now have mandatory boating education laws.

The Pennsylvania Fish Commission believes strongly that boaters are the best source of information on boating problems and concerns in the state. To determine the attitude of the boating public, the Commission's Bureau of Boating surveyed 1,100 randomly selected registered boat owners for their opinions concerning mandatory boating education. Over 700 surveys, 64 percent, were returned. This overwhelming response illustrates the great boater interest in safety issues.

The respondents gave a clear message favoring mandatory boating education for operators committing violations. Only nine percent of the respondents disagreed with violators being required to take a course. The survey results also supported mandatory education for the operators of powerboats born after a certain date (such as 1/1/74). This question basically asked the respondents their opinions on a law similar to Maryland's. It became clear that the respondents did not overwhelmingly favor mandatory boating education for all boaters, but that they preferred a program for "problem" boaters and a phased approach for younger people.

Mandatory education is a complex issue. Last April, the introduction of H.B. 280 in the State Legislature has transformed the issue from "hey, this might be a good idea" to "wow, this could become state law!" The U.S. Coast Guard Auxiliary, the U.S. Power Squadrons and other organizations have been doing a great job educating boaters, and will continue to do so without a mandated program. The Commission will also continue its efforts toward voluntary boater education. It's possible the current voluntary system of boating education in Pennsylvania is sufficient.

Conversely, mandatory education may be just what is needed to reduce boating accidents and conflict on the water. Murphy's law comes into play when boating. Whatever can go wrong, eventually will. Because of the nature of boating and the millions of participants, there will always be some accidents. An undisputed fact is that any form of mandatory boating education passing into law in Pennsylvania will immediately draw public attention to boating safety issues. Such a law would result in more people taking boating courses. It certainly would be a positive step to have more boaters know what they are doing. But would a mandated system be worth the trouble? States with mandatory boating education have yet to demonstrate the effectiveness of a mandated versus a voluntary system.

The current boating safety education programs in the Commonwealth are excellent. However, more needs to be done. The Commission is increasing its efforts to promote its programs, increase their availability, and assist other organizations to educate the boaters of the Commonwealth. Our goals for boating education in the 1990s are clear—greater visibility and more educational opportunities for the public. With these goals in mind, the Commonwealth's waters can be made safer for all boaters.

KIDS PAGE!

by Steve Ulsh

Why PLAY?

"We are studying about fish."
"Tell me all about fishing."
"We found a turtle. Can we keep it?"
"My brother told me snakes can cross-breed."
"Why can't I catch a fish?"
"My mom says you can't eat fish from the Schuylkill River."
"Our class is studying Pennsylvania. Send me something."
"Our family is going to Lake Erie. Tell me how to catch a big fish."
"What is a hellbender?"

These were just a few of the lines written to us in 1980 when we started PLAY (Pennsylvania League of Angling Youth). In addition, we received hundreds of requests for educational materials, especially from elementary school teachers. The subjects ranged from specific information about fish, reptiles and amphibians, to various topics related to the environment.

We decided to start first with children. Kids of all ages love emblems, so we developed one depicting a brook trout. Next came a membership card, a good luck hook, a litter bag, a booklet about fishing and another on fishing rules. A canoe pamphlet was thrown in for good measure.

All this material was placed in a PLAY packet, advertised in Pennsylvania Angler and sold for $2 (the price is still the same today). In addition, a PLAY six-page newsletter written on an elementary reading level was produced quarterly and sent to each new member.

Emblems, newletters and PLAY packet materials along with time have changed since former executive director Ralph Abele presented the first membership to Donnie Ruth 11 years ago. The only major change is that teachers who take a KARE workshop can now get PLAY newsletters in classroom quantities.

PLAY fills a small but important niche in a child's fishing experience. Over 80,000 kids have joined PLAY. With the interest they've shown, we know it will be around for years to come.

PENNSYLVANIA FISH COMMISSION

PLAY

young anglers news

Pennsylvania League of Angling Youth

YOU CAN JOIN P.L.A.Y. NOW

(Pennsylvania League of Angling Youth) is an educational program specifically designated to reach youngsters. Members receive a colorful jacket patch, a quarterly newsletter, special Fish Commission publications and access to the PLAY Correspondence Center.

Enclosed is $2.00 (check or money order).
Please enroll me in P.L.A.Y.

Name ____________________

Street ____________________

City ____________ State ____________ Zip ____________

Send to **P.L.A.Y.**, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

My Outdoor World

When we adults teach our children about fishing, boating and conservation, we try to instill in them our own ideas, or the ideas we believe are important. But young people have their own notions about what is important. Considering those ideas can help us better shape our teaching, whether the instruction takes place in a school classroom or along the banks of a farm pond where a grandfather teaches his granddaughter to fish.

How do young people view the environment? What do they expect recreationally from the outdoors? What do they believe are the most important conservation issues? What are the clues that suggest whether or not young people will manage our resources responsibly when they become adults?

Listen to the answers and ideas of a few young Pennsylvanians.

From my viewpoint as a freshman in high school, environmental knowledge is very important. Although the earth's overall state seems to be gradually and unfortunately becoming worse, I think there is still much hope. This world's society is all backward when it comes to who cares the most about the earth. Most of the concerned people happen to be adults over the age of 20, and the percent of youth that know and care about our environmental problems is not very large. Now to me, it should be the other way around. Today's youth are the ones who must deal with the earth in the future, so I think we should also be involved in caring for it in the present. I am well aware of the fact that youth can only help to a certain extent, but I think that we could at least do as much as possible in the area of indirect help, such as recycling, conserving and reusing. That is why environmental education is important in today's schools. Without it, the next generation wouldn't be the greatest.—*Rodney Groff, Ninth Grade, Lancaster Mennonite High School, Lancaster, PA.*

I want to save the water because some people don't have clean water like others do. The past several months, I have cut down wasting water and other products. A lot of states, especially California, have water shortages. I wish all people could cut down and stop wasting this vital and precious resource.

I also think we should recycle things such as paper, cans and lots of other things.

Saving the earth isn't going to be easy. It will take everyone working together to make a difference. Won't you please help?—*Michelle Meyer, Sixth Grade, Porter Township Elementary School, Lamar, PA.*

We need to become responsible for our actions. Learn to make wise decisions when buying products and learn to recycle. It will help to keep the earth around for my children and grandchildren.—*Simon Sampsell, Sixth Grade, Porter Township Elementary School, Lamar, PA.*

I learned a lot about the environment in my school. One thing I learned about in science class is that fish aren't just food for people or other animals. They are creatures that share the earth with us.

Plastic six-pack holders and other things that people throw into rivers can hurt the animals that live there. We have to recycle plastics and cans and keep our rivers safe for the animals.—*Ricardo Cooper, Fourth Grade, Fulton Academy of Geographic and Life Sciences, Pittsburgh, PA.*

I think it is interesting and important to learn about the environment. Because our water resources are a part of our environment, we need to learn as much about rivers, streams and other water resources as we can.

Some things I learn in school are how acid rain pollutes our water. I think acid rain is terrible and we need to do something about it. One thing I can do is walk or ride a bike instead of always going by car. Car exhaust puts acid-making chemicals into the air.

If we are going to save our rivers, lakes, streams and other water resources from pollution, we all have to do our part.—*Kaaren Terpack, Fourth Grade, Fulton Academy of Geographic and Life Sciences, Pittsburgh, PA.*

Aquatic education is the study of water resources. We learn how acid rain affects water resources and the animals that need these resources.

Some lakes look beautiful and blue, but they are actually dead. The lake is dead because there are no fishes and plants living in it. If we did not know about acid rain, we would just think, "what a beautiful clear lake." We would not know that it was in real trouble.

When we go home, we can tell our parents what we learned. I told my parents about acid rain and how it damages our lakes. Now they know about it, too.—*Tiffany Jones, Fourth Grade, Fulton Academy of Geographic and Life Sciences, Pittsburgh, PA.*

When I first started sixth grade, I was hurting our earth. At that time I was unaware that my actions and habits were having an effect on the quality of our environment. I was using styrofoam cups and plates, but I don't now. When I was in fifth grade I loved to pound nails into trees for my tree house, but since then I have learned what damage it does and I have stopped.

As you read this, people all over the world are doing things that will have negative effects on planet earth. They are destroying our tropical rain forests, polluting our air and water, and are not using our natural resources wisely.

Please take the time to learn ways that you can make a difference so that this beautiful earth is here for future generations to enjoy.—*Scott Eisenhower, Sixth Grade, Porter Township Elementary, Lamar, PA.*

Water is our most needed resource. Did you know that if all the water on earth were represented by one gallon, only one drop would be clean and drinkable? Our waters all around the world are being polluted with oil and toxic waste. When people throw trash out near streams and rivers, it hurts the animals. When the water is polluted, our fish and birds die.

To conserve water is to save it and use it over and over. That is what we need to do with all of our natural resources.

Bruce Mathews

How can we conserve? Here are some answers. Turn water off when brushing your teeth or washing your car. Put bricks in the back of your toilet tank, and fix leaky faucets. These are only a few ways to help. Keep on or start conserving our water if you haven't yet!—*Jennifer Dotterer, Sixth Grade, Porter Township Elementary School, Lamar, PA.*

Across from my house is a stream called Fishing Creek. It has bottles, cans and garbage in it. One day it really made me sick so I went over and tried to get most of the junk out, but now it's a mess again. I am going to clean it again on Tuesday if it is warm enough to get into the water. If I get the stream clean, then maybe fish will come and I can go fishing.—*Roy Farrington, Sixth Grade, Porter Township Elementary School, Lamar, PA.*

An Education Resource Directory for Pennsylvania Anglers and Boaters

by Heidi Milbrand

Hungry for information? Have a yearning for knowledge? Want to know the facts? If you answer yes to any of these questions, check out the following directory to help broaden your horizons. Here you will find many Pennsylvania outdoor education opportunities.

State parks

There are 113 Pennsylvania state parks, including four environmental education centers, three undeveloped areas, two ski concessions and two historic areas. Most parks have seasonal environmental interpretive technicians (EITs, or park naturalists) who provide guided hikes, evening programs and guest speakers. They also staff the visitor centers and offer programs for children in daily or week-long sessions.

State park environmental educational centers offer year-round educational programs, catering to schools and other large groups. Also offered are programs to the general public. These two- or three-hour presentations include nature hikes, identification games or guest speakers on a broad range of topics.

State park environmental education centers can be reached at these locations and numbers: Jennings (Butler County), RD 1, Slippery Rock 16057, (412) 794-6011; Kings Gap (Cumberland County), 500 Kings Gap Road, Carlisle, PA 17013, (717) 486-5031; Jacobsburg (Northampton County), 835 Jacobsburg Road, Wind Gap 18091, (215) 759-7616; and Nolde Forest (Berks County), RD 1, Box 392, Reading 19607, (215) 775-1411.

For information on Pennsylvania state parks and the programs they conduct, call toll-free (800) 63-PARKS. You may also use this number to inquire about state park publications, exhibits and visitor centers.

Bureau of Water and Soil Conservation

In Pennsylvania, the potential adverse effects on Commonwealth waters as a result of land use and development are addressed by several laws. You can obtain the *Erosion and Sediment Pollution Control Program Manual* free of charge. This publication lets people engaged in earthmoving activities understand and meet requirements of the department's rules and regulations pertaining to erosion control. The primary objective of this manual is to improve the design and construction of effective erosion and sedimentation controls, minimizing accelerated erosion and preventing sediment pollution to the waters of the Commonwealth.

Contact: Bureau of Water and Soil Conservation, One Ararat Boulevard, Room 214, Harrisburg, PA 17110; or call (717) 540-5080.

Fish Commission Bureau of Boating

Three programs are offered to the public to help people be safer boaters. The Boating and Water Safety Awareness program is geared toward youth and teaches subjects including personal flotation devices (PFDs), canoe safety, hypothermia, and alcohol and boating. Kids learn through classroom settings and lessons on the water.

The "Toward Safer Boating" program is an eight-hour classroom course geared for adults. Topics discussed include navigation rules, types of boats, legal requirements, communication processes and basic first aid.

The Commission's Water Rescue Program is for firemen, rescue personnel and ambulance squads. This program is divided into three phases: Phase I introduces the rescuer to basic rescue preparedness; Phase II trains for boat-based rescues; Phase III is further divided into four modules that cover ice rescue, line systems, low-head dams and in-water rescues.

For information on any of these programs, call (717) 657-4540, or write to: PA Fish Commission, Bureau of Boating, Boating Safety Education Section, P.O. Box 1673, Harrisburg, PA 17105-1673.

Fish Commission Bureau of Education & Information

To educate and inform Pennsylvanians on the importance of our aquatic resources, the bureau sponsors a Keystone Aquatic Resource Education program (KARE) and a youth program called PLAY (Pennsylvania League of Angling Youth).

KARE is an environmental education program on water resources. It addresses subjects such as water quality and its importance; wetlands; fish, reptiles and amphibians; acid rain; protecting aquatic habitat; and other topics related to the aquatic resources of Pennsylvania. The program has materials for all age groups and is targeted for use by schools, but it can easily be adapted for camps, clubs, youth groups and adult organizations. For information about KARE, contact: KARE, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

PLAY is an educational program for children that since 1980 has taught thousands of youngsters about fishing, boating and the aquatic environment. For a $2 fee, members receive a package of information containing materials designed to help them become more familiar with the world of fishing and boating and the need to preserve and protect Pennsylvania's environment and natural resources. Annual membership also includes a quarterly newsletter written for young anglers, a colorful patch, an official membership card, and a correspondence center called, "The Tackle Box," for personal answers to fishing, boating and environmental questions. For information, contact: PLAY Program, PA Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

Volunteer E&I Corps

Through the Bureau of Education & Information, the Fish Commission maintains an 18-member Volunteer Education & Information Corps. Started in 1982 to assist and supplement Commission staff and employees in educating and informing the general public about fishing opportunities. Corps members assist the Commission in its Keystone Aquatic Resource Education (KARE) program. Their activities include assisting in local and state envirothon competitions, delivering publications, presenting fishing clinics and demonstrations, operating exhibits and displays, and giving aquatic-related talks to a variety of groups.

Pennsylvania waterway maps

Maps Useful to Pennsylvania Anglers and Boaters is the title of a Fish Commission guidesheet that lists where you can get a variety of maps for Pennsylvania waterways. The Commission itself doesn't sell these maps. The guidesheet is a compilation of map sources outside the Commission. To request the guidesheet, contact: Publications Section, Dept. F, PA Fish Commission, P. O. Box 1673, Harrisburg, PA 17105-1673. Please include a business-sized stamped, self-addressed envelope with your request.

Jill Barnes

Chesapeake Bay Foundation

The Chesapeake Bay Foundation (CBF) is the largest non-profit conservation organization in Pennsylvania working to "Save the Bay." CBF has 75,000 members nationwide (12,000 in Pennsylvania). The group's efforts focus on environmental education, environmental defense and land conservation.

CBF now offers on-the-water educational field trips for Pennsylvania school districts in Dauphin, Lancaster, Lebanon, York, Chester and Cumberland counties. Students in seventh through twelfth grade from public and private schools are eligible, and the cost is $4 per student (no charge for teachers and chaperones). Group size must be 20 to 24 participants and trip times can be designated to fit the school day.

CBF's education program has been operating field trips for students since 1972, and approximately 35,000 students participate each year. The educational programs are geared toward keeping the students actively involved, getting the students on the water and in the field, working closely with teachers, and being safe. Introductory workshops are mandatory for all teachers new to the CBF program. To make arrangements, group leaders should contact Anita Kraemer or Steve Oliphant at (717) 234-5550.

For more information on the Chesapeake Bay Foundation, contact Sheila Brown at (717) 234-5550.

Western Pennsylvania Conservancy

The Western Pennsylvania Conservancy is the largest private land-conservation organization in the Commonwealth. The Conservancy has one essential purpose: To conserve water, land and wildlife. It believes that some of the region's irreplaceable natural treasures must be protected, and that needed development should be channeled around places of exceptional scenic, scientific or recreational value.

The Conservancy receives no tax money for its work. It is supported solely through private funding and more than 20,000 dues-paying members. Since 1932, the organization has conserved over 140,000 acres of choice natural lands throughout western Pennsylvania.

"Education" means passing knowledge on to others and enriching our own outdoor experience.

More Educational Resources

✎The Fish Commission has available a complete list of its free and paid publications. The list includes wall charts, books, pamphlets, PLAY patches and forms for magazine subscriptions. Single copies of the publications list are free, but with requests please include a business-sized stamped, self-addressed envelope. Contact: PA Fish Commission, Publications Section, Dept. F, P.O. Box 1673, Harrisburg, PA 17105-1673.

✎The Delaware River Shad Fisherman's Association (DRSFA) holds meetings that feature informative, educational speakers and programs from January through May. For more details, contact treasurer John Scholl, 501 Magnolia Road, Hellertown, PA 18055.

✎Some Pennsylvania Trout Unlimited chapters hold educational programs at meetings and offer fly tying and fly fishing instruction. To find the chapters nearest you, contact the Pennsylvania State TU Council at P.O. Box 1126, Federal Square Station, Harrisburg, PA 17108, or call state council public relations chairman Ray Squires at (215) 296-2429 (evenings only).

✎The Pennsylvania BASS Chapter Federation includes some 78 chapters involved in educational programs for clubs and other groups. For information, contact membership chairman Jed Strausbaugh, 264 Cottage Hill Road, York, PA 17403, (717) 846-7598; or chapter federation president Dana Frankenburg, 106 George Junior Road, Grove City, PA 16127, (412) 662-1554.

✎Pennsylvania Power and Light Company's (PP&L) Montour Preserve (Montour County) offers exhibits and programs on a variety of outdoors and conservation topics. For more details, contact PP&L's Montour Preserve at RD 1, Box 292, Turbotville, PA 17772, (717) 437-3131.

✎Some marinas, marine suppliers, and bait and tackle shops sponsor clinics on boating and fishing subjects. Consult these businesses locally to find out which ones offer these opportunities.

Information just informs. Education is information that changes a person's behavior.

Nearly all Conservancy projects are sold at cost to public agencies for parks, forests and game lands. The land is then available for the enjoyment of all people, for all time, and the money is recycled into new land acquisition projects.

For more information about the Conservancy and its programs, contact CBF's Director of Public Relations Bill Randour at (412) 288-2773. If you would like to join, you can call, write or visit the headquarters at 316 Fourth Avenue, Pittsburgh, PA 15222. The phone number is (412) 288-2777.

ALLARM

ALLARM (Alliance for Acid Rain Monitoring) is a group of citizen volunteers who systematically monitor the waterways throughout the Commonwealth for the effects of acid deposition. Since its beginning in January 1987, ALLARM has grown to include over 300 volunteers in 45 counties, many of whom have committed themselves to weekly monitoring of pH and alkalinity concentrations in streams or lakes of their choice for one full year.

The volunteers are diverse in terms of educational background, employment and political affiliation. Many volunteers are retired and view this effort as a way to make a significant contribution to future generations.

For more information, contact Dr. Candi C. Wilderman, Coordinator of ALLARM and Associate Professor, Dickinson College, Department of Geology, Carlisle, PA 17103; (717) 245-1355.

Outdoor Writers Association of America (OWAA)

OWAA is a non-profit international organization representing professional communicators who report and reflect on America's diverse outdoor interests. More than 2,000 members cover topics that range from how to catch more fish or be a better hunter to environmental issues and wildlife photography. They are writers, broadcasters, photographers, artists, editors and lecturers living and working in the United States, Canada, Mexico and other parts of the world. Through OWAA membership and adherence to its creed and code of ethics, members provide honest, thorough and unbiased outdoor coverage.

The organization maintains a speakers list for those groups interested in offering programs. For more information, contact OWAA Executive Director Sylvia Bashline at (814) 234-1011, or write to: OWAA, Inc., 2017 Cato Avenue, Suite 101, State College, PA 16801.

Pennsylvania Outdoor Writers Association (POWA)

Established in 1950, POWA is the largest state outdoor communications group in the nation. It is composed of more than 260 magazine and newspaper writers, book authors, artists, photographers, editors, lecturers and radio and television broadcasters from Pennsylvania and many other states. These professionals communicate to an audience of millions on a range of subjects dealing with every aspect of the outdoors, including fishing, boating, hunting, shooting and hiking, as well as environmental issues and natural history.

Most of the organization's services are for members (improving their communication skills), but POWA maintains a speakers bureau that lists members available for slide presentations and lectures on a wide variety of subjects.

For a copy of the POWA list of speakers, contact POWA Executive Director Linda Steiner at P.O. Box 189, Cooperstown, PA 16317.

U.S. Army Corps of Engineers

For nature enthusiasts, the Environmental Learning Center (ELC) at Crooked Creek Lake, near Ford City (Armstrong County), offers year-round conservation and environmental education programs. These programs have been conducted since 1976 and are available to universities, colleges, schools, scout groups and conservation organizations.

The ELC has kitchen and dining facilities, classrooms and dormitory sleeping facilities for 28 people. A user fee is charged for groups that wish to use the ELC. There is no fee when the group performs volunteer conservation work at Crooked Creek.

For complete details, contact: U.S. Army Corps of Engineers, Federal Building, Room 1834, Natural Resources Mgmt. Branch, 1000 Liberty Avenue, Pittsburgh, PA 15222; or call (412) 644-4192.

U.S. Coast Guard

The Coast Guard Boating Safety Hotline provides answers to boating safety questions, especially federal safety requirements, or operators can direct you to the proper sources. The service is also the best way to learn if your boat, motor or trailer has been involved in a manufacturer's safety recall, and you can also report what you think is a safety defect in equipment. Contact the Hotline at (800) 368-5647.

Government Publications for the Maritime Consumer is a U. S. Coast Guard fact sheet that describes many useful boating publications, including prices and ordering information. For a free copy, contact: Chief, Consumer and Regulatory Affairs Branch (G-NAB-5), U. S. Coast Guard Headquarters, Washington, DC 20593-0001. Or call the Hotline.

County conservation schools

Several Commonwealth counties offer one-day to one-week schools designed for junior high school students. The schools are usually sponsored by local sporting clubs, and they are sometimes held right on the grounds of a club. The schools offer classes in wetland ecology, wildlife management, stream surveying and boating safety.

Some of the counties that offer conservation schools are: Potter, Paul Lilja, (814) 274-8474 (daytime); Cumberland, Bill Porter, (717) 776-3825; Dauphin, WCO Barry Mechling, (717) 486-7087; Cambria, Joe Emerick, (814) 472-5440, extension 580; Bedford, Harry Guyer, (814) 766-2221; and Northampton, George Krietz, (215) 258-2384.

Museums

The Pittsburgh Children's Museum offers interactive, hand-on exhibits for youngsters from infants to 12-year-olds. Some of the museum's exhibits change quarterly, and some are permanent or on permanent loan from other agencies. Johnson & Johnson also sponsors an exhibit for infants with lots of toys to aid in their motor skills and growth.

An Old Fashioned Meat Market exhibit allows kids to see what the Roaring '20s was like in the Pittsburgh area along with a packet boat that can be used to load groceries from a store and travel down the Ohio River.

These exhibits are excellent ways for kids to touch, learn and grow in the excitement of discovery. For more information, contact Public Relations Director David Adair at (412) 322-5059.

THE ROCKWOOD SCHOOL DISTRICT'S FISH FARM

BY BOB HOOK

As you walk into the classroom of agricultural education teacher Timothy Vought, the idea "Something fishy is going on here" means something special. Vought and his students are on the cutting edge of conservation and agricultural education. Some 183 students in the Rockwood Area Junior-Senior High School have been involved in a project that many consider to be the up-and-coming trend in farming—aquaculture. With a dash of trial and error and at least a pinch of patience, Vought and his students eventually succeeded in raising and harvesting a new food crop—fish known as blue tilapia.

> THE ADDITION OF THE AQUACULTURE FACILITY GAVE STUDENTS A CHANCE TO COMBINE CLASSROOM LEARNING WITH PRACTICAL APPLICATIONS OF THE LESSONS.

In the natural world, adaptability is often the key to survival. So it is also in the continuously changing field of agricultural education. A portion of Rockwood's ag mechanics shop was recently converted into academic classrooms. Vought was not discouraged by this loss of space. Instead, he proposed that the remaining area be converted into an aquaculture laboratory.

The seed for the change in the school's ag curriculum was planted in the summer of 1990 when Vought attended Penn State's Professional Technical Education Institute. Ag teachers from across Pennsylvania were given information describing the materials and equipment needed to conduct an aquaculture project. Vought had also become aware of the national need to change agricultural education from ag production to education in ag science, technology and society. The addition of the aquaculture facility at Rockwood gave the students an opportunity to integrate classroom lessons in these three areas with practical application of the lessons in lab activities.

Clair Lewis

The knowledge Rockwood students gained from the new lab is as unique as the project. Seventh grade life science classes discovered an interesting approach to the study of concepts such as food chains because the lab provided living organisms to study. According to Vought, this method reinforced textbook reading and writing assignments because the water quality testing and record-keeping were done as projects involving the students. The students were made aware of the complex relationships of some of the cycles in the environment. Weighing and measuring the tilapia soon became a favorite activity on the path to accomplishing this objective.

The students in the eighth grade Ag Expo classes investigated career opportunities in agriculture and learned that it is quickly becoming a highly diversified industry. Terms such as "tilapia" and "aquaculture" have become part of their working vocabulary.

Some of the construction was even completed by the students. Those enrolled in the ninth through twelfth grade ag classes built the frames to support the fish tanks. Under close supervision, they also built the pipe and plumbing work needed for the water circulation system.

The entire project demanded much planning and time on the part of the instructor. Mrs. Donna Johnson, Rockwood Junior-Senior High School principal, recognizes Vought's talents. She believes Vought "personifies one of the essential attributes of a master teacher—vision." She is also aware of his commitment to "be attuned to and to prepare students for entry into a world of ever-changing technology."

Cooperation

Ambitious projects such as getting an aquaculture lab up and running require the cooperative efforts of many people. Vought is quick to acknowledge that without the capable assistance of these folks, his project would still be just a good idea. Johnson and the school's business manager, Brian Coughenour, secured funding for the lab. Custodians Ray Bowlby and Vernon Shumaker pitched in with construction, tools and troubleshooting the system. The lab built at Rockwood included materials that were developed by the Penn State ag department and field tested by other ag teachers from across the state.

The Fish Commission loaned the fiberglass tanks, approved the Artificial Propagation Permit, and offered technical assistance in simulating an aquatic environment in which plant and animal life could thrive. And of course, the enthusiasm and energy of the students were essential ingredients for a successful project, especially at those times when success seemed unattainable.

Actual construction of the system began with the start of the 1990-91 school year. The fiberglass tanks were first sanded and steamed clean. Cracks in the tanks were then repaired and the inside of each tank was painted black. Next, the wooden frames were assembled and the tanks were positioned parallel to allow recirculation of the water in the system. The plumbing, bio-disc filter, and the drum clarifier were then installed. Finally, the aerator, water pump, siphons and water heaters were positioned. Throughout construction, state regulations pertaining to the artificial propagation of tilapia, a non-native species, in a closed system were carefully followed.

"The students were proud of their craftsmanship and breathed a sigh of relief when the two 200-gallon tanks were filled with water," Vought recalled with a noticeable grin. Everything appeared to be ready for the tilapia, but the decision was made to test the system first by stocking the tanks with native bluegills, catfish and sunfish from local ponds.

Water tests

The students began conducting daily water tests to measure pH, total ammonia, nitrate, dissolved oxygen and temperature. In addition, the students performed weekly monitoring of alkalinity, total hardness, carbon dioxide and chloride.

Participants were required to keep accurate records of the daily and weekly water test results. From these records they were able to graph changes in the water quality. Correlations among the monitored conditions began to appear. For example, the students observed a decrease in oxygen levels as the water temperature increased. Some students were able to relate this to fish kills in

Clair Lewis

area lakes during the hottest periods of summer.

The first batch of local fish died within a week. As students searched for the cause, they discussed the chemical processes involved and the function of their system's bio-disc filter in controlling them. They reviewed how fish waste and uneaten fish food produce ammonia. Vought reminded them of the need to regulate the bio-disc filter so that it would convert the ammonia to nitrite more quickly. They discovered that this in turn would convert to nitrate within a week to 10 days. Algae in the tank could then use the nitrate as fertilizer and the fish would survive.

Eventually, the students established the proper settings on the bio-filter. The system's water quality records indicated that conditions were favorable for raising tilapia. However, the students lacked the references needed to compare the ideal conditions for raising bluegills, sunfish and catfish with those required by tilapia, a tropical species. The students ordered additional reference materials to help them make an accurate comparison.

As this process of scientific inquiry continued, it was determined that gouramis, which thrive at water temperatures of 74 to 82 degrees, would be suitable to test the system's potential for propagation of tilapia. Several gouramis were purchased from a local pet shop. Following daily monitoring of the gouramis, the students concluded that they could now raise tropical fish in their system. Their first taste of success!

100 tilapia

In January, Vought's students made their annual trip to the Pennsylvania Farm Show. There they visited an exhibit featuring aquaculture, a newcomer to the 75-year-old event. The students learned that there are currently almost 300 fish farms in Pennsylvania. They also met Bill Krape, co-owner of Freshwater Fish in Gettysburg. Arrangements were made to purchase blue tilapia fingerlings from his farm. Rockwood FFA chapter members J.B. Harrold and Jarod Hoover helped return 100 tilapia safely to the school and transfer them to the tanks.

> **THE DIVIDENDS THE STUDENTS REAPED, INCLUDING VALUABLE SCIENCE AND AQUACULTURE KNOWLEDGE, WERE SOME 80 TILAPIA AVERAGING 1.5 POUNDS AND MEASURING 12 TO 13 INCHES LONG.**

Early the next morning an eager group of ag students rushed into the lab to see if their fish had survived the first night. All were fine except for three acrobatic tilapia that had found an opening in the cover placed on the tanks. They were found dehydrated on the floor. Plastic netting was installed to prevent a reoccurrence of this mishap.

A few fish "escaping" the tank were not the only problem Vought and his young ag scientists encountered. A severe electrical storm knocked out service to the school during one night, shutting off power to the aerator and pump. In another instance, the aerator was bumped out of position, causing water to splash onto the heater controls. This short-circuited the heater. Fortunately, the students detected these electrical malfunctions quickly enough so that repairs were made before any tilapia were lost.

Water supply problems also presented difficulties. Over Easter vacation the water pipes leading to the ag room broke. Water had to be hauled from another part of the building to save the fish. On another day, the water recirculating pipe was knocked out of position and 200 of the system's 400 gallons of water flooded the school's first floor. Somehow the water missed the two drains located just a few feet from the tanks.

Soon after this excitement, students cleaned the clarifier, designed to remove the sediment and dissolved solids from the water. The odor from the 50 gallons of waste collected in the clarifier fouled the school air for several hours. Now everyone in the school knew that an aquaculture lab was operating! Vought and his crew have since refined their cleaning methods, to the delight of all who are downwind of the ag room.

Despite the obstacles the group faced, as usual, persistence paid. The dividends the students reaped, in addition to the valuable science and aquaculture knowledge, were in the tilapia averaging 1.5 pounds and measuring 12 to 13 inches in length.

Just before the school bells rang signaling the end of another school year, the students tasted the fruits of their labor. Nearly 80 tilapia were harvested and barbecued on three grills. Word on the street is that Vought and his young chefs should consider opening a seafood restaurant in southern Somerset County.

When most of the fish raised in the project had been eaten, Timothy Vought probably went home to his farm near Meyersdale to enjoy the summer with his wife Shirley and four children, right? Not exactly. I'm sure he found time for some well-deserved rest, but when Tim wasn't busy raising beef cattle, playing the trumpet, or shooting black powder rifles this summer, he was taking care of the brood stock of tilapia in anticipation of an even more successful aquaculture lab during this school year. He hopes to raise aquatic plants in a hydroponics unit as well this year.

Mrs. Donna Johnson, Vought's boss, says, "Through Mr. Vought's initiative in the aquaculture program, he has enabled students to have hands-on experience in one facet of the 'farms of the future.' Our district is fortunate to have Mr. Vought."

Believe it or not, many students were anxious to return to classes at Rockwood this year. Can you guess why?

Bob Hook is a member of the Fish Commission Volunteer Education and Information Corps, and he is a KARE facilitator. He is a high school teacher in the Rockwood School District. For their assistance in preparing this article the author thanks P.T. Vought and J.B. Harrold.

On the Water

by Dave Wolf

"Partings"

My grandfather was as close to a hero to me as anyone will ever come. I admired the man; I looked up to him and copied his every move. He was strong-willed and stubborn and my family has often chastised me for actions they thought were similar to his. "OK, Art Deppen," they would respond to my display of stubborn behavior. To this day I have retained his opinionated stubborn streak to the point that it has been molded into my personality.

I regret that he passed away when I was only 15. We spent far too little time together outdoors—a place of his constant schooling. There I was taught fishing and hunting, with the emphasis on proficiency. We always rushed to and from our destinations so much so that I suspected they might escape if we did not reach them in time. Now I realize we never stopped to "smell the roses" along the way, to identify and admire a tree, wild flower or even a bird that fled our path.

We had one mission in our fishing and that was to catch fish, and a lot of them. The resource was something to be conquered—it was more like a test than an outing, and unfortunately limits meant nothing to him. I readily admit that he often took three or more limits of trout in a day, and with the admiration I had for the man I might have done the same—but fortunately I was not a good enough fisherman to take a limit at the time, much less three.

Even though there is no defense for such actions, we never wasted what we took. My grandmother carefully filleted every trout and served them rolled in pancake flour and fried in butter. My grandparents were from the coal region of the state and lived on a tight budget. The fish were welcomed as food and I am sure a cost-saving commodity. At the time I thought nothing of my grandfather's actions, although there was a gnawing feeling deep inside that things were just not right.

Our parting began slowly. The first indication was at Fisherman's Paradise, back in the days when you were allowed one fish per day. I was six years old at the time, and I did not know that dipping the "puff balls" (a name my grandfather used for yarn wrapped around the hook) into salmon oil was illegal. The "puff balls" did pass the fly-fishing-only requirements, however, and when I took my first trout of 17 inches five minutes after the legal start at Paradise, I swiftly dispatched the fish and proudly marched to the weigh-in station. I had conquered that smart old fish and was proud of it. I spent the rest of the day waiting for my grandfather to catch the largest fish possible before quitting time. I was restless and impatient and had wished often throughout the day that I would have released my fish and continued fishing. It was a small nudge toward my current-day catch-and-release philosophy, but one I will never forget.

Later that week I released the first fish I caught and all others I took during the day; my grandfather was arrested, fined and expelled from the Paradise for a year. He was arrested for soaking his "puff balls" in salmon oil. Now the uncomfortable feeling grew even greater; we were breaking the law and I knew better. Now the parting became apparent, despite the fact that my grandfather was someone to be looked up to and admired. What he was doing was wrong, not only in my eyes, but in the eyes of the law.

Psychologists tell us that we are often molded in our childhood and that these important years determine our actions throughout life. But there comes a time when we outgrow those impressionable years and we are responsible for our own actions. The parting is now both physical and ethical. My grandfather has passed on and I readily admit that it is difficult to write uncomplimentary words about him, but I find it necessary, for many of us have followed the path of childhood influence without partings, and many today may still be trapped by the ethical standards set down by someone we admired and even mirrored during our younger years.

My grandfather will always be special to me and he has set many a fine example, but I have taken the best and used it wisely and have taken the bad and replaced it with my own standard of values.

"Partings" are painful, but necessary for many of us.

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Straight Talk

Crisis Time for Pennsylvania Boating

In 1963, fewer than 60,000 boats were registered in Pennsylvania. The registration fees then were $4 for boats less than 16 feet in length and $6 for boats 16 feet and longer. Today, more than 286,000 boats are registered and the registration fee structure is exactly the same as it was 28 years ago. Pennsylvania currently ranks 12th in the nation in the number of registered powerboats. But if you discount the populous coastal states of California, Texas, Florida and New York, each of which provides unlimited marine boating opportunities, and the states of Ohio, Michigan, Minnesota and Wisconsin with their huge Great Lakes resources, it is evident that Pennsylvania waterways are heavily used and that for boating enthusiasts Pennsylvania ranks among the top few inland states.

Pennsylvania is fortunate to have more than 45,000 miles of rivers and streams for boating, together with 76 natural lakes that provide 5,100 acres of water suitable for boating. Some 56 miles of tidewater Delaware River and 800 square miles of Lake Erie offer other natural boating waters, and manmade reservoirs provide an additional 200,000 acres.

Boating in Pennsylvania continues of grow, but the growth of the number of accesses and waterways for boating has stalled. Boat sales in Pennsylvania in 1990 approached $70 million, and sales of boating accessories, fuel and supplies also increased. A 1990 study by the Penn State Data Center estimates annual boating-related expenditures at $3 billion, which adds up to a major component in Pennsylvania's economy and local and state tax revenues.

This growth in boating into every available water is now creating many problems because of congestion and reckless boat operation. Public safety is an ever-increasing concern. The public outcry for more education, improved facilities and expanded boating safety law enforcement is very loud and clear.

To help meet this public outcry, the Commission introduced legislation in early 1991 to restructure the boat registration fees so that they provide the necessary funding to better meet these demands. In late July, the Pennsylvania House of Representatives passed by a vote of 154-45 House Bill 1107, which updates the boat registration fee structure. In addition, the bill provides for a change in the name of this agency to the Pennsylvania Fish and Boat Commission to properly recognize the importance of boating activities in Pennsylvania. This legislation also provides for a flat registration fee of $5 for unpowered boats whose owners choose to register their boats for their own protection and for use at state parks and Fish Commission facilities. The bill now rests in the Senate Appropriations Committee, awaiting action by the Pennsylvania Senate when it reconvenes in early October.

It is very important to the future of safe boating in Pennsylvania that the Senate moves quickly to support this legislation so it can be implemented for the 1992 boating season. A long delay or unfavorable action poses a serious threat to the future of Pennsylvania's boating programs, and the safety of the boating public. The Commission will continue vigorously to pursue successful adoption of H.B. 1107 with the Senate, so that Pennsylvania's boating program may continue to hold its recognized position among the nation's leaders. Continued support by the fishing and boating public is essential and deeply appreciated.

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

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The Keystone State's Official Fishing Magazine

SEP 25 1991

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The cover

This issue's wraparound front and back cover, photographed by Barry and Cathy Beck, shows the October solitude, pleasure and beauty of a spring pond near Fairmount Springs, Columbia County. For more possibilities, see page 8 for trout fishing ideas and page 22 for largemouth bass information. This issue's 125th Commission anniversary celebration continues on page 4 with a look at the Cooperative Nursery Program, and we tackle provocative conservation issues on pages 12 and 15. On page 25 a Commission employee speaks frankly about, well, nearly everything. And on page 31 we explore whether "tree huggers" and the "hook and bullet crowd" can find common ground.

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DOCUMENTS SECTION

INSIDE COOPERATIVE NURSERIES

BY BILL PORTER *photos by the author*

The proposition that raising trout is as much fun as catching them still seems true to a lot of Pennsylvania anglers in the Cooperative Nursery Program. "We currently have 148 sponsors operating 182 trout nurseries, one walleye station, and four bass units in southeastern Pennsylvania," says Cecil Houser, chief of the Commission Cooperative Nursery Unit.

"We may have reached a plateau—gains and losses of sponsors and raceways have about matched each other for the last four years," adds Houser. In fact, a summary article of the Golden Anniversary of the program, printed in a 1976 *Angler*, showed similar strength in the program. There were 155 organizations with 175 coldwater nurseries, seven bass facilities and one walleye unit.

Official records began in 1932 with the present organization dating back to October 1965. The Fish Commission established the position of cooperative nursery coordinator then.

Robert H. Brown was the first to hold this post, and his title was changed to chief, Cooperative Nursery Program. At Brown's retirement, Paul Byers, an experienced cooperative nursery staffer, was promoted to chief of the unit. In January 1988, when Byers retired, Houser was appointed as the new chief of the cooperative program.

From a modest beginning, the cooperative nurseries increased in numbers and fish production has gone over one million stockable fish a year.

The Fish Commission's contribution to the program is considerable and goes beyond the Cooperative Nursery Unit staff. Technical assistance, fingerling trout and other species, water tests, construction plans, educational meetings, law enforcement in cases of poaching and vandalism, raceway visits and more are all part of the Commission's overlapping bureau services. The success of the program depends on the sportsmen, the Cooperative Nursery staff and other areas of the Commission in overlapping roles.

Policy

Before construction could begin on a new raceway, there had to be some standardized procedures followed. To be consistent, a policy for the cooperatives was established in the early 1960s, and revised in April 1970 with some adjustments in January 1976. The fast growth indicated the need for Fish Commission policy adjustments.

"Actually, the adjusted policy of that time has pretty much remained intact. The most recent changes relate to stocking procedures where a waterways conservation officer (WCO) is to be advised two weeks before the stocking takes place and no trout are to be stocked in Class A Wild Trout Waters, and/or Wilderness streams," Houser says.

Key points of the basic policy require a year's site observation by Cooperative Nursery Unit staff with assistance of a WCO, as needed. Water quality requirements remain the same with one adjustment in the revised policy. Water temperature is now measured at a nursery inlet instead of the source of water.

Site inspections are still done under the Cooperative Nursery Unit staff that has responsibility for raceway operations, problems, emergencies, and growth or raceway improvement. Finally, of key points, the cooperative nursery fish are still beyond the regular numbers stocked by the Commission.

Basic phases

Working within this policy, there are four basic phases from desire to the working nursery. Getting involved requires awareness of the policy, then field work at the site with Commission staff, and commitment of club members, and in some cases, property owners.

The second step, how to construct, follows. In addition to the raceways themselves, there are intake systems, screening, food storage and other facilities to consider. The Bureau of Engineering in 1969 developed a set of standard plans for raceways, available to clubs.

And construction didn't necessarily stop with the initial building. The Waynesboro Fish and Game Protective Association, Franklin County, completely redid its operation following poor design of the original. Also in Franklin County, the Chambersburg Rod and Gun Club built a brand new facility some distance from the original.

Saltillo Sportsmen's Club Nursery (above), Huntingdon County, in 1978. Below left, 3-C-U club members, Erie County, examine their fingerling trout.

The third step, how to care, begins after receiving the fingerlings. Diet, in a single word, is perhaps the most important factor in developing normal growth and maintaining a healthy trout population.

"We don't have the dietary problems we used to have in the early years," says Houser. "Modern technology in formulating dry pellets and a better understanding of what the trout really need have gone a long way to reducing feeding headaches for the nurseries.

"Venison, once a staple in cooperative nursery trout diets, is used sparingly now. Clubs such as Marienville, Forest County, and the Kane Rod and Gun Club, McKean County, fed tons of venison and deer liver in the early years. Now we suggest it only for special cases—3-C-U, for instance, likes to give its young salmon a shot of venison and liver to give them a good start in Lake Erie. Again, the dietary deficiencies rarely exist now.

"We have also found that the newer pellets assimilate better and we can grow more pounds of fish on less feed than in the early days of pellets and venison," Houser says.

The fourth major step, how to prevent, deals more with preventing problems than standard operating features. Screening, now standard, was once something clubs installed later as the need became evident. Now newer clubs include this feature as part of the initial package.

Aeration devices to increase dissolved oxygen, or to eliminate nitrogen, were once Rube Goldberg gimmicks that worked to a degree. Now technology has allowed sophisticated units that work off of regenerative compressors. Super-effective, the units are expensive.

Demand feeders and automatically timed units simplify the feeding operation with more economical use and better distribution of the pellets. Finally, most nurseries have built proper food and equipment facilities as part of new raceway construction or major renovation. In the old days, a steel drum may have been it for a while until need demanded more.

Problems

The same problems affecting nurseries and their fish still exist now as they did from 1932 on. It is now a question of degree.

For example, natural predators were dealt with as the need developed. Nurserymen noticed a loss of fish and discovered why they were gone. Screens, wires, roofed raceways and other devices were tried as cures. The trend now for natural predators such as birds, certain mammals, water snakes and the like are handled in a preventive pattern—eliminating the trouble before it starts.

Vandalism, almost unheard of in the 1960s, has continued to worsen up to and including the present time. In 1976, the Jim Thorpe Club, Carbon County, surrounded its raceways with chain link fence topped with barbed wire. Thieves had been stealing the trout. The night before Paul Byers and I visited the nursery for inspection and an article, vandals hitched chains to the fence and ripped it apart with the chains fastened to pick-ups. Dauphin County Anglers had holdover fish shotgunned. Another nursery lost its fish when a bag of lime was emptied into the intake system.

At times weather has also been unkind to cooperative nursery units. Hurricane Agnes in 1972 was probably the worst natural disaster to hit the cooperatives. But the storm finally blew itself out and months later most of the affected clubs were back in business at restored sites or new locations. In a report by Bob Brown, the Cooperative Nursery Unit listed three units totally destroyed, 24 had lost all their fish, and others were from 10 percent to 75 percent lost or destroyed. Dauphin, Cumberland and Perry County clubs took a beating, as did other counties in southcentral and southeastern Pennsylvania.

Dry weather, low water and high temperature are other natural problems that cut into the success of the Cooperative Nursery clubs. "The year 1988 was bad for those kinds of problems—in fact, the worst since I have been working with the co-ops. This year could be just as bad or worse," says Houser.

But the clubs bounced back in 1972 and survived 1988, and they will come through the drought of 1991.

Fiddler's Run Sportsmen's Association Nursery, Northumberland County, in 1980. Notice the motorized screen control, upper left.

YBAC under the lens

The Yellow Breeches Anglers and Conservationists Association is a single nursery that has been through it all and has become a showplace of cooperative nurseries.

A 30-year veteran of the Cooperative Nursery Program, the YBAC had humble beginnings, using wire baskets set in Boiling Springs (now Children's) Lake.

"That didn't work," says Ernie Clay, nursery manager, "so we moved on to better things at our current site at Lutztown Run."

By 1968, the club had built two 200-foot raceways, added water control units above them and had constructed a storage building, outdoor lights and fencing.

"We had sloping amesite raceways. These were eventually replaced with cement and block construction—much better," Clay says.

By 1983, the club had 10 acres of grounds, a modern clubhouse, a garage to house the stocking truck and other equipment, an intake system for water collection and control, and 1,100 feet of raceways and related structures. Add 40,000 trout or more raised annually.

"We hold over about 3,000 trout to add some big ones to our stockings each time we release fish," says the nursery manager. The estimated amount of feed used annually is at least 20 tons.

Ernie and his brother, Gene, currently president of YBAC, spearheaded the construction work in its various phases along with many dedicated club members. "This was great," says Gene Clay. "The place looks good and it takes a lot of effort on the part of members to keep it that way."

The Yellow Breeches group was not without its problems. The changes in structure were designed to solve "growing pains" and other concerns. High water, including "Agnes," has caused fish loss and structural damage. A carry-off and a buffering wall have been added to remove excess water, and adjustments were made to the screens to keep the trout in place.

In 1989, YBAC put $4,500 in a new aerating system that works off two alternating motors and allows controlled air flow into each pen of the total raceway area. Again, the continued improvement drive exists here and is characteristic of most cooperative clubs.

The Yellow Breeches Creek, Children's Lake, and the youngsters' section of the Letort receive the club's fish.

"We think our Cooperative Nursery program is alive and well," says Cecil Houser. "There has been a leveling off of the number of units involved with still some modest growth balanced by the loss of some nurseries, based on water supplies, termination of leases and other issues. We're still handling in excess of a million fingerlings and stocking about a million legal-sized trout a year throughout the state."

If there is a new direction to the program, it is placing more emphasis on coolwater and warmwater species and rearing facilities for them.

"We have four bass raceways and one hi-tech walleye unit, the S.O.N.S. of Lake Erie, Erie County," Houser says.

And that's a look at the Cooperative Nursery Program, a very unique and worthwhile effort on the part of Pennsylvania anglers and the Fish Commission.

Unidentified nursery volunteers (above) in 1979. Below left, club president Paul Hostetter (left) and former Co-op Nursery Program chief Bob Brown (right) circa 1968. Note pay feeder on tree.

SENIOR NURSERIES

"Senior nurseries" does not refer to the age of the operators. It relates instead to the number of years some clubs have been in the business of raising trout for the public. These clubs, listed below, are still active and due a tip of the hat.

The Windber Sportsmen's Association, Somerset County, began operation in 1932.

The Wood Duck Chapter of Trout Unlimited, Centre County, entered the program in 1939.

Two clubs still in Cooperative Nursery Program work date from 1950—the Daniel Boone Rod and Gun Club and the Mohnton Fish and Game Protective Association, both in Berks County.

Three clubs began service in 1951 and are still active. These nurseries include Western Clinton Sportsmen, Clinton County; Lil-Le-Hi, Lehigh County; and Mill Creek Rod and Gun Club, Lebanon County.

Hi La Sportsmen's Association, Elk County, entered the picture in 1952.

Heathtown Sportsmen's Club, Jefferson County, and Springside Sportsmen's Club, Lehigh County, joined in 1955.

In 1956, three more new clubs that are still active entered the program. They are the Eldred Conservation Club, McKean County; Lititz Sportsmen, Lancaster County; and Bald Eagle, Blair County.

In 1959, the Norwich Town Sportsmen's Association, McKean County, began its nursery project.

In the 1960s, there was an amazing increase in the number of clubs and raceways getting involved in the Cooperative Nursery Program. By the 1969-70 year, there were 98 nurseries with 74 sponsors that stocked about 488,000 legal-sized trout.

Continued growth occurred so that by 1987, more than one million legal-sized fish were stocked from 189 nurseries handled by 155 sportsmen's clubs.

The solid foundation for this success had to be credited to the zeal, optimism and hard work of those early "senior nurseries" that never gave up.—*BP*

THE LIGHTER SIDE

There is a barn in Erie County used to raise trout. Part of the 3-C-U Trout Association, the North East Hunting and Fishing Club converted a cattle barn to a raceway. The stone walls control temperature. There are no predators and 30,000 fingerlings in inclined troughs do quite well since 1970.

A larger version of this structure pattern is the Saltilo Sportsmen's Nursery, Huntingdon County. The raceway is completely enclosed. Varied colored roof panels allow light and weather protection. Inside there are 104 feet of channel raceways with two right-angle bends. A 12-inch drop supplies flow and the water leaves the building about a foot below where it came in.

Philipsburg Rod and Gun Club, Centre County, built its block raceway right in the middle of a pond and then built a bridge to get to it.

Originally, Hershey Hooks and Horns had its nursery in silos suspended in a stone quarry. The wire cages were controlled by cables that could raise them to a horizontal position. A club member entered the cage to net the fish. There was over 200 feet of water under him at the time.

The Eldred Conservation Club, McKean County, built a redwood tank nursery (circa 1968) in the basement of a member's home in the winter. Come spring, some basement doors and block walls were temporarily sacrificed to get the raceway out of the cellar and into the water.

Then there have been some odd-ball diets. One club fed hard-boiled eggs, secured from a nearby processing plant. Cooked, chopped and fed—the trout gobbled them up but didn't grow. The idea was abandoned.

The Port Clinton Club, Schuylkill County, fed raw macaroni to its trout. As the elbows softened, the trout worked on them. They also gave them some chopped bananas and watermelon from time to time—a balance of proper pellets eliminated serious dietary problems.

And the Farnsworth Trout Club, Warren County, had a bear problem—as many as three at a time prowled the raceway, cooling off and eating a trout or two. Eventually one of the bruins was fed to the trout.—*BP*

Oil and Water

Mike Sajna

by Mike Sajna

Many anglers believe fishing today isn't as good as it was in the old days. We like to look back at the last century with wistful eyes full of pristine streams flowing through virgin forests of hemlocks. We see native brook trout so abundant and willing, an angler could catch a hundred in the course of a day—and not the six- and seven-inch brookies so common today, but fish of a pound and better.

Of course, nothing is ever quite the way we imagine it. Most of the 19th century in Pennsylvania was a period of terrible destruction for wildlife and the environment. Driven by near unbridled greed, the state's mountains were stripped bare of trees first to tan the hides of millions of buffalo, and then later to support the steel mills, coal mines, railroads and oil fields sprouting on the landscape.

How extensive the abuse was in the oil country of northwestern Pennsylvania is evident in the photographs of John Mather in the Drake Well Museum near Titusville.

Mather was an Englishman visiting his brother in Ohio when he learned of Edwin Drake's success in drilling a well for oil and traveled to Titusville. At the same time Matthew Brady recorded the carnage of the Civil War, Mather was busy capturing the world's first oil boom, amassing photographs of what was then viewed as wonderful progress.

Now these photographs are most striking for the waste and ruin they show. During oil's boom years, northwestern Pennsylvania was as devastated as any of Brady's battlefields, a world of mud, hills where derricks replaced trees and streams turned into stagnant ditches of black scum.

B & C Beck

Pausing on the bike path in Oil Creek State Park, I try to imagine the area in Mather's time. It is something I occasionally find myself doing on Oil Creek, but always without much luck. Even with the help of markers it is difficult to picture the wreckage of the 19th century amid the greenery and slightly tinted water of the late 20th century. For a moment I think I have the scene in order, but then a fisherman upstream raises his rod and the image dissolves into what appears to be about a 14-inch brown trout. I smile.

Trout fishing center

As it was once the artery out of which the oil industry grew, Oil Creek today stands at the center of trout fishing in Pennsylvania's oil country. More than 100 feet wide in many places and stocked by the Fish Commission for about 30 miles, it is one of the largest trout streams in the state. Its combinations of long, deep pools and mostly gentle riffles surrounded by scenic wooded hills and farms have led some people to compare it to New York's legendary Beaverkill River.

"In terms of a trout program, much of Oil Creek is marginal water through most of the year because of elevated water temperatures. Its nature is to warm up, and that's indicated by the presence of reproducing warmwater species, rock bass and smallmouth bass," says Dick Snyder, chief of the Commission Fisheries Management Division. "But that doesn't mean we can't use it for a seasonal, stocked trout fishery.

"We've got to call a spade a spade," he continues. "Some years it can hold trout longer than others. Despite all the special regulations we put there, if the habitat is limiting, that's the weak link in the chain."

Ron Lee, area fisheries manager for the Northwest Region, terms Oil Creek a put-and-take fishery that along with warm water temperatures also suffers from siltation because of the number of farms that border it, a problem common to many streams in the state. In addition, he says, Oil Creek and other streams in oil country continue to face threats from abandoned wells, and especially brine and other wastewater runoff from active wells in the watershed.

But every stream has its problems in today's overcrowded world. Even if water temperatures reaching into the upper 70s make Oil Creek more enticing at times as a swimming hole than a trout stream, anglers can still succeed around spring holes and the mouths of feeder streams.

By October, though, the siltation improves considerably. Maybe it becomes too good. Oil Creek is big water, a hundred feet or more across in many places, and it is fed by many tributary streams. Heavy fall rains can make it unfishable, so it is best to call ahead and check on water conditions before making a trip. Oil Creek Outfitters is located on the banks of the stream in Oil Creek State Park, and Mike Laskowski can provide up-to-the-minute information on water conditions and hatches.

October action

When Oil Creek is under control, however, October brings some outstanding dry fly fishing with a size 14 cinnamon caddis, according to Laskowski, who has been tracing local hatches for several years. "That is super fishing in the evenings starting around 3 p.m. and running until dark," he says.

He recommends working riffles at the heads of pools and occasionally twitching the fly to give it the impression of a live caddis skittering across the surface. "Don't use a light tippet," he says, "because fish strike aggressively and will break off a light tippet."

Oil Creek's stocked water runs from roughly Riceville in northeastern Crawford County downstream to Rouseville. The upper stream to Titusville flows past a mixture of farms, woods and homes, picking up size as the East Branch, Thompson Creek and other tributaries add their water.

Route 8 is the key access road for all of Oil Creek. It follows the stream at widely varying distances almost from its headwaters to the mouth. From Titusville upstream to Hydetown the water can be reached along Route 8. Starting at Hydetown and extending to Centerville, access comes by secondary roads running off Route 8. S.R. 1020 picks up the stream at Hydetown and follows it to Tryonville, where Township Road 860 meets it and continues to Centerville, at which point Route 8 again appears and runs up to Riceville. Cemetery Road also parallels the stream opposite Route 8.

By the time Oil Creek reaches Titusville it is already a substantial piece of water, but still only somewhat more than half of what lies on the other side of town. Below Titusville, Pine Creek, bearing the runoff from southwestern Warren County, appears to swell Oil Creek beyond the size of many western rivers.

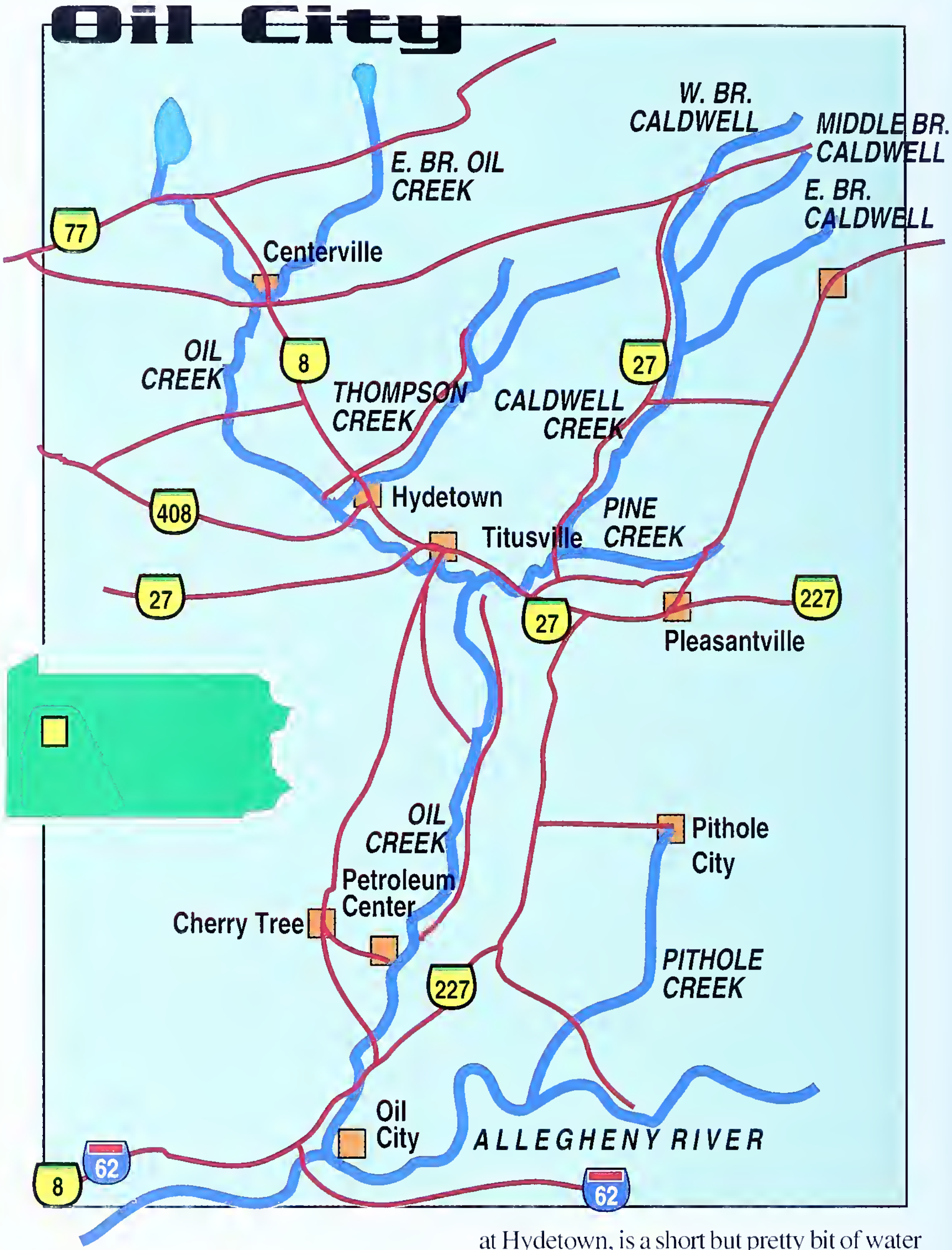
Drake Well Museum lies just downstream of the junction of Oil Creek and Pine Creek, and marks the start of an isolated 10-mile piece of water protected by Oil Creek State Park. Here the stream can be reached by road only at four locations. The upper end can be fished at the park; the middle section by taking Dutch Hill Road, which appears along Route 8 below Titusville, to the unpaved Miller Farm Road; the lower by taking S.R. 1009 off Route 8 above Cherry Tree and then Pioneer Road; and the downstream end by following the signs on Route 8 for Oil Creek State Park and then the park headquarters at Petroleum Center.

All of Oil Creek between Drake Well Park and Petroleum Center also can be fished off a paved bike path. Rental bikes are available at Petroleum Center, which runs along the stream. Picnic spots and rest areas make the path an enjoyable way to spend a day on the water. Historical markers scattered along the creek provide a pleasant diversion when the fish aren't cooperating.

Petroleum Center also stands at the upper end of Oil Creek's delayed-harvest, artificial-lures-only project. The special regulation water runs from the bridge downstream 1.6 miles to the railroad bridge at Columbia Farm. The project is stocked both by the Fish Commission and the Oil Creek Chapter of Trout Unlimited.

Oil Creek has a reputation as a caddis stream, but Laskowski maintains that it has almost all the major mayfly hatches and a few, such as the Black Quill, that many other streams in Pennsylvania known for their abundance of fly life do not have. The only major mayfly hatches Oil Creek does not have is the Hendrickson and Green Drake. "For the problems that it has endured, it is an aquatically rich stream," Laskowski notes.

For anglers who prefer smaller waters, or for those days when rain makes the main stream unfishable, the Oil Creek watershed offers alternatives.



map graphic- Ted Walke

East Branch Oil Creek

Flowing out of Clear Lake, the East Branch of Oil Creek is stocked for about 10 miles from Route 8, where it empties into Oil Creek, upstream through Centerville to Spartansburg on Route 77. Like Oil Creek, it is another large stream limited to a put-and-take trout fishery because of warm water, Lee notes.

The East Branch can be reached in the Centerville area off Route 8, S.R. 1022 and S.R. 1041. Route 89 between Buell Corners and Route 77, and off Route 77 in Spartansburg are other access roads. Flat Road, which can be picked up in Centerville, and Fish Flats Road, which joins Route 89 south of Merchants Corners, also provide access.

Thompson Creek

Thompson Creek, which joins Oil Creek at Hydetown, is a short but pretty bit of water born near Shelmadine Springs by the merger near Shirley Run and Hummer Creek. It can be reached by taking S.R. 1013 off Route 8 at Hydetown. Anglers should be aware that a portion of the stream is posted.

Pine Creek

Larger than either the East Branch or Thompson Creek, Pine Creek is stocked for about eight miles from its confluence with Oil Creek near the Drake Well Museum upstream. It is accessible off Route 27 heading east toward Enterprise, as well as off Dotyville Road, Keyes Road and Mt. Hope Road, all of which run off Route 27.

Caldwell Creek

Caldwell Creek and the West Branch of Caldwell Creek are part of the Pine Creek watershed and considered by many fishermen to be among the best streams in northwestern Pennsylvania. Only small to medium in size, they can be difficult to fish in many places because of heavy stands of alders along the banks, but both have some beautiful pools and hold good supplies of holdover fish, along with streambred browns and brookies in the headwaters.

Both streams also have plenty of good hatches and special regulation projects. Caldwell Creek's delayed-harvest, fly-fishing-only water runs for 1.2 miles from the Selkirk Bridge downstream to the Dotyville Bridge. The West Branch's catch-and-release project covers 3.6 miles from the West Branch Bridge above Selkirk upstream to Three Bridge Run.

The heart of the Caldwell Creek and the West Branch of Caldwell Creek fishery can be reached by taking Route 27 toward Grand Valley. South of that village a road sign points to S.R. 2004 and Selkirk two miles away. Dirt-and-gravel Dotyville Road runs straight ahead off S.R. 3004 and parallels Caldwell Creek downstream. Flat Road is another dirt-and-gravel road that joins S.R. 3004 near the Selkirk Bridge and leads to the West Branch.

"Oil Creek and East Branch are put-and-take fisheries," Lee says in summing up oil country waters. "Thompson Creek has excellent reproduction of brown trout. Pine Creek has good reproduction of browns in the upper end and good year classes present. "Year classes" means fish from young-of-the-year through age six, probably, and occasionally eight- or nine-year-old lunkers in one of the deeper pools. Caldwell has reproduction in its upper end and holdover trout year-round. The West Branch of Caldwell has excellent reproduction."

Pithole Creek

Next to Oil Creek, probably the best known oil country stream is Pithole Creek. A tributary of the Allegheny River that joins the river upstream of Oil City, Pithole is a pretty little stream splendidly isolated amid second growth hardwoods and hemlocks over a good portion of its length.

"Pithole is basically a pretty good trout stream from the West Branch down," according to Lee. "From there up I don't know what the problem is. But there is good reproduction and some really good-sized browns downstream."

Access to the upper stretches of Pithole's best water may be had by following the signs for Pithole City off Route 227 along S.R. 1006, while its lower section is accessible by taking S.R. 1004 off Route 227 at Plumer.

Economic boom and bust

Pithole City, situated roughly near the middle of the stream's trout water, was the site of one of the biggest and shortest-lived economic booms and busts the world has ever seen.

Until 1864, the region around Pithole Creek, which takes its name from fissures in the rocks around its mouth, was a wilderness for which few people had any use. Then I.N. Frazier and James Faulkner formed the United States Petroleum Company, leased 65 acres from Thomas Holmden and began searching for oil with a witch hazel divining rod. They found it in January 1865 when the Frazier Well was drilled and started producing at the rate of 250 barrels a day. The company's stock shot from $6.25 a share to $40, and the race was on.

In May of 1865, Pithole City was laid out to accommodate the fortune-seekers rushing into the area. Buildings were put up in as short a time as five days. By September, when production from local wells was running at 6,000 barrels a day, the town had a population of 15,000 with two telegraph offices, two banks, two churches, a post office, a water company, a fire company, daily newspaper, scores of grocery stores, hardware stores, blacksmith shops, 60 hotels or boarding houses and a 1,100-seat theater.

Almost as fast as they had arrived, however, the wells began to stop, and then in October Pithole Creek caught fire when youngsters touched a match to its oil-fouled surface. The resulting blaze destroyed $1.5 million worth of property. A month later the Frazier Well quit, and in January 1866 oil prices dropped sharply, and that April there were six more fires.

Pithole held on as a town through the remainder of 1867. Three years later only a handful of people remained. In 1878, Venango County bought the site of the Frazier Well, which during the height of the boom was sold for $2 million, for $4.37 in back taxes. A small museum, operated by the Historical and Museum Commission, and grass walkways with photographs of the town are all that remain of Pithole.

But history is not what is on my mind when my Renegade catches on a stray bit of brush. My only thought is to free it without putting down the trout I had glimpsed rising from under a log next to the nearby bend. When I finally manage somehow to achieve my goal and make the cast, the fish rises on cue and shoots for the tangle of limbs at the upper end of the log. But he is small and I manage to stop him. A minute or so later, I am releasing a brown of about eight inches and then thinking about history, and how Pithole was once so polluted it was a fire hazard.

What a difference a century can make when Mother Nature is given a chance.

Accommodations, Camping and Info

Hotel and motel accommodations for anglers fishing Pennsylvania's oil country include the Holiday Inn, Seneca Street, Oil City; Colonel Drake Hotel, Franklin Street, Titusville; and McMullen House Bed and Breakfast, Main Street, Titusville.

Camping is available at the Happy Valley Campground, Sopher Road, Titusville; Valley View Turkey Farm Campground, R.D. 3, Titusville; and Oil Creek Campground, Shreve Road, Titusville.

Fishing equipment and information is available at Oil Creek Outfitters, Petroleum Center; Wilderness Connection, Spring Street, Titusville; and Hopkins Sporting Goods, Diamond Street, Titusville. Information on stream conditions is also available by calling Oil Creek Outfitters at (814) 677-4684.—*MS*

Oil Country Hatches

This hatch list was prepared by Mike Laskowski of Oil Creek Outfitters for Oil Creek, but with some allowances it can be used as a general guide for fly fishing most oil country streams.

March 1, Early Black Stonefly.
March 20, Early Brown Stonefly.
April 1, Blue-winged Olive.
April 15, Blue Quill, Quill Gordon, Grannom Caddis.
April 20, Black Quill.
April 25, Small Black Caddis.
May 5, Bright-Green Caddis.
May 15, Gray Fox, Blue-Winged Olive, March Brown.
May 25, Sulphurs, Light Cahill, Slate Drake.
May 30, Brown Drake.
June 1, Sulphurs.
June 20, Light Cahill.
July 10, Trico.
August 5, White Fly.
September 30, Cinnamon Caddis.

Anglers looking for Hendrickson and Green Drake hatches not found on Oil Creek can try Thompson Creek, Caldwell Creek, the East Branch of Caldwell Creek, Pine Creek and Pithole Creek. Look for the Hendrickson starting around April 15 and the Green Drake around May 20.—*MS*

Acid Deposition and the Clean Air Act Amendments of 1990

by David E. Spotts

The goal of the 1970 Clean Air Act is to "protect and enhance the quality of the nation's air resources." The Clean Air Act was amended in 1977 to adjust the regulations to be concurrent with air pollution research discoveries and the evolving technology on how to limit the effects of pollution. After 13 years of study, deliberation and hearings, our 101st U.S. Congress and the President of the United States approved the Clean Air Act Amendments of 1990. The recent amendments address attainment and maintenance of ambient air quality standards, mobile sources of air pollution, toxic air pollution, acid rain, permits, enforcement, stratospheric ozone protection, miscellaneous provisions, and clean air research.

Many of these provisions including acid rain are new to the Clean Air Act. Here is a summary of the acid rain provisions. They will ultimately affect the aquatic resources here in Pennsylvania.

Title IV of the Acid Deposition Control provision states the Congress finds that:

1. the presence of acidic compounds and their precursors in the atmosphere and in deposition from the atmosphere represents a threat to natural resources, ecosystems, materials, visibility and public health;
2. the principal sources of the acidic compounds and their precursors in the atmosphere are emissions of sulfur and nitrogen oxides from the combustion of fossil fuels;
3. the problem of acid deposition is of national and international significance;
4. strategies and technologies for the control of precursors to acid deposition exist now that are economically feasible, and improved methods are expected to become increasingly available over the next decade;
5. current and future generations of Americans will be adversely affected by delaying measures to remedy the problem;
6. reduction of total atmospheric loading of sulfur dioxide and nitrogen oxides will enhance protection of the public health and welfare and the environment; and
7. control measures to reduce precursor emissions from steam-electric generating units should be initiated without delay.

Scientists have long realized that sulfur dioxide (SO2) emissions, primarily from fossil fuel combustion, are the major source of acid deposition. The congressional findings were historic in a sense that the long debate about the cause and effects of acid rain was ended. Currently there are approximately 20 million tons of SO2 emitted each year in the United States. One of the goals of the acid rain provision is to reduce annual SO2 emissions by 10 million tons from 1980 emission levels.

Electric utility plants will be most affected because they account for roughly three-quarters of the total SO2 emission rate. The plan will cap the annual utility SO2 emission rate at approximately 8.9 million tons by the year 2010.

This task will be accomplished in two phases. Phase I will impose a standard of 2.5 pounds of SO2 emissions per million BTUs by the year 1995. Nine Pennsylvania plants, which include Brunner Island, Martins Creek, Sunbury, Armstrong, Hatfields Ferry, Cheswick, Portland, Shawville and Conemaugh, will have to lower emissions to meet the Phase I standard. By the year 2000, a decrease to 1.2 pounds of SO2 per million BTUs would be required by the Phase II acid rain provision.

Reductions of SO2 emissions are planned to be met by a market-based system where affected utility plants are assigned emission "allowances" based on required reductions and historic energy use. Each allowance is equal to one ton of SO2 and it is marketable by permitting utilities to trade, purchase or sell emissions to and from the affected sources.

PA Fish Commission photo

The acid deposition regulations also require an annual two million ton emission reduction of nitrogen oxides (NOx) from the 1980 level, but unfortunately no cap was put in place. Other provisions include incentives to utilities that achieve early reduction requirements, utilize units that use energy conservation or renewable energy, and/or implement clean coal technology projects.

The Fish Commission has actively sought legislation to control acid deposition since 1978. Our 1986 "Policy on Acid Precipitation" urged the federal and state governments to reduce SO2 and NOx emissions by 50 percent. This reduction estimate was based on a National Academy of Sciences study that concluded that 80 percent of the nation's affected waters would be protected or recover if the annual SO2 deposition rate were reduced to 15 pounds per acre per year. Pennsylvania's current SO2 deposition rate ranges from 23 to 41 pounds per acre per year.

With the Clean Air Act's complicated "allowance market," it is impossible to determine what Pennsylvania's SO2 rate will be in 10 to 15 years from now. We know only that the nation

The goal of the original Clean Air Act of 1970 was to "protect and enhance the quality of the nation's air resources." The 1990 amendments, approved by Congress, will affect the Keystone State.

as a whole will experience a 10 million ton reduction of SO2 emissions. However, the Fish Commission is optimistic that the 1990 Amendments will benefit the Commonwealth's affected waterways.

A draft National Acid Precipitation Assessment Program (NAPAP) report speculates that because the major emission sources are located along the Ohio River Valley, our geographic region should experience a reduction of SO2 emissions greater than 50 percent. The report also predicts an SO2 deposition rate of less than 15 pounds/acre/year. We were further encouraged by scientific studies recently presented at the International Conference on Acidic Deposition that demonstrated the recovery of aquatic ecosystems in regions that experienced SO2 emission reductions. These important studies nullified the theory that waterways would become permanently acidic once acid deposition exhausted the acid neutralizing capacity of a watershed.

The Fish Commission was pleased that Congress finally passed the necessary legislation that will hopefully end the acid rain crisis. I want to thank concerned anglers and citizens who took the time to voice their opinions for cleaner air. We all can continue to do our part to limit air pollution in several ways, such as conserving energy, promoting mass-transit and asking our congressional leaders to pass legislation that would further reduce NOx emissions.

Congress recently re-authorized NAPAP to provide a research and assessment mechanism for evaluating the effectiveness of the acid deposition provision of the 1990 Clean Air Act Amendments. The Commission may play an active role in these evaluations and we will try to keep you informed on how our aquatic resources have responded. Unfortunately, we will not honestly know the final results until the year 2010!

More on acid precipitation

To learn more about acid deposition and discover which approved trout waters are vulnerable to further acidification, write to the Commission for the pamphlet *Acid Precipitation*. With requests please send a business-sized self-addressed, stamped envelope. Contact: Publications Section, Dept. F., Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

KiDSPaGE!

by Steve Ulsh

Striped Bass

Striped bass and their relatives, striped bass-white bass hybrids, are fairly new to Pennsylvania anglers. However, they've been around a long time, especially on the east coast of the United States. The coastal Indian tribes used stripers as a food source. They took these big fish when they entered shallow parts of rivers, coves and lagoons. In addition to eating them, they used stripers to fertilize their corn crops.

Originally, stripers were anadromous (an-add_-row-muss). This means they needed freshwater rivers to spawn. In the late 1800s, things began to change. A man from California saw stripers spawning in an eastern river. He caught some and sent them by train to Nebraska; when they got there they were put in barrels and sent to California by wagon train. Out of the 180 fish caught, 107 survived! Since then, by stocking, they've spread all over the United States.

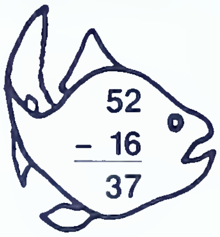
The lower Delaware River in eastern Pennsylvania is the only place in Pennsylvania where migrating stripers can be found today. Stripers in lakes such as Raystown and Lake Wallenpaupack, in Huntingdon County, are stocked as fingerlings (less than five inches) by the Fish Commission.

Striper hybrids are a cross between a white bass and a striped bass. In some states they are called sunshine bass. The reason for stocking hybrids is that they can survive the warmer water temperatures of some of our shallower lakes. Some lakes where hybrids can be found are Blue Marsh Lake and Ontelaunee Reservoir in Berks County, Pinchot State Park Lake in York County, Lake Nockamixon in Bucks County, and Lake Arthur in Butler County.

Stripers get big! Trophy fish in the 20-pound class are common today. So if you go for stripers, use heavy tackle and large lures and live bait. They feed like your hungry class at school when pizza is served—loud and often.

The Schooling Striper Feast

A school of large stripers herded or gathered some gizzard shad to eat them. Circle all the fish shapes that have the correct answers. Add the correct answers to find how many gizzard shad were eaten.



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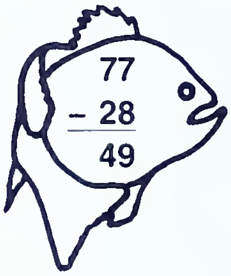

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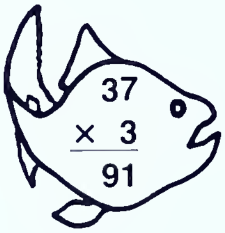

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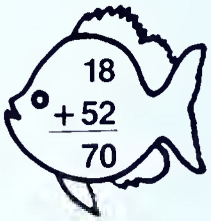

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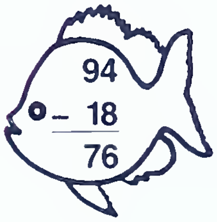

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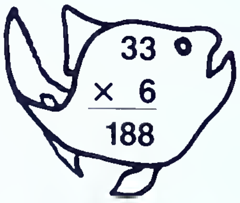

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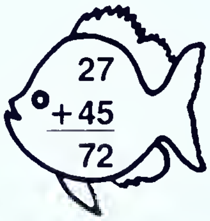

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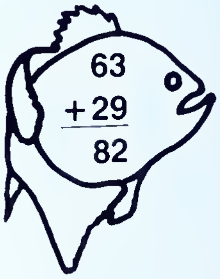

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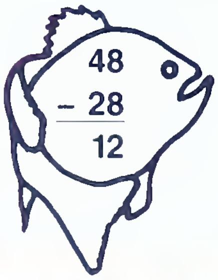

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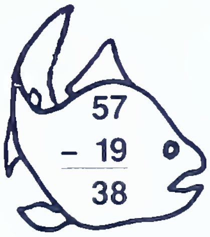

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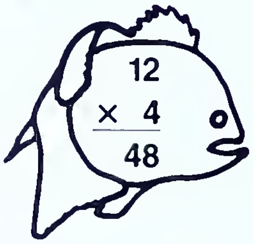

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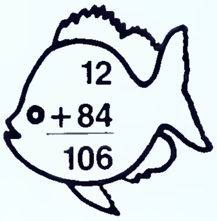

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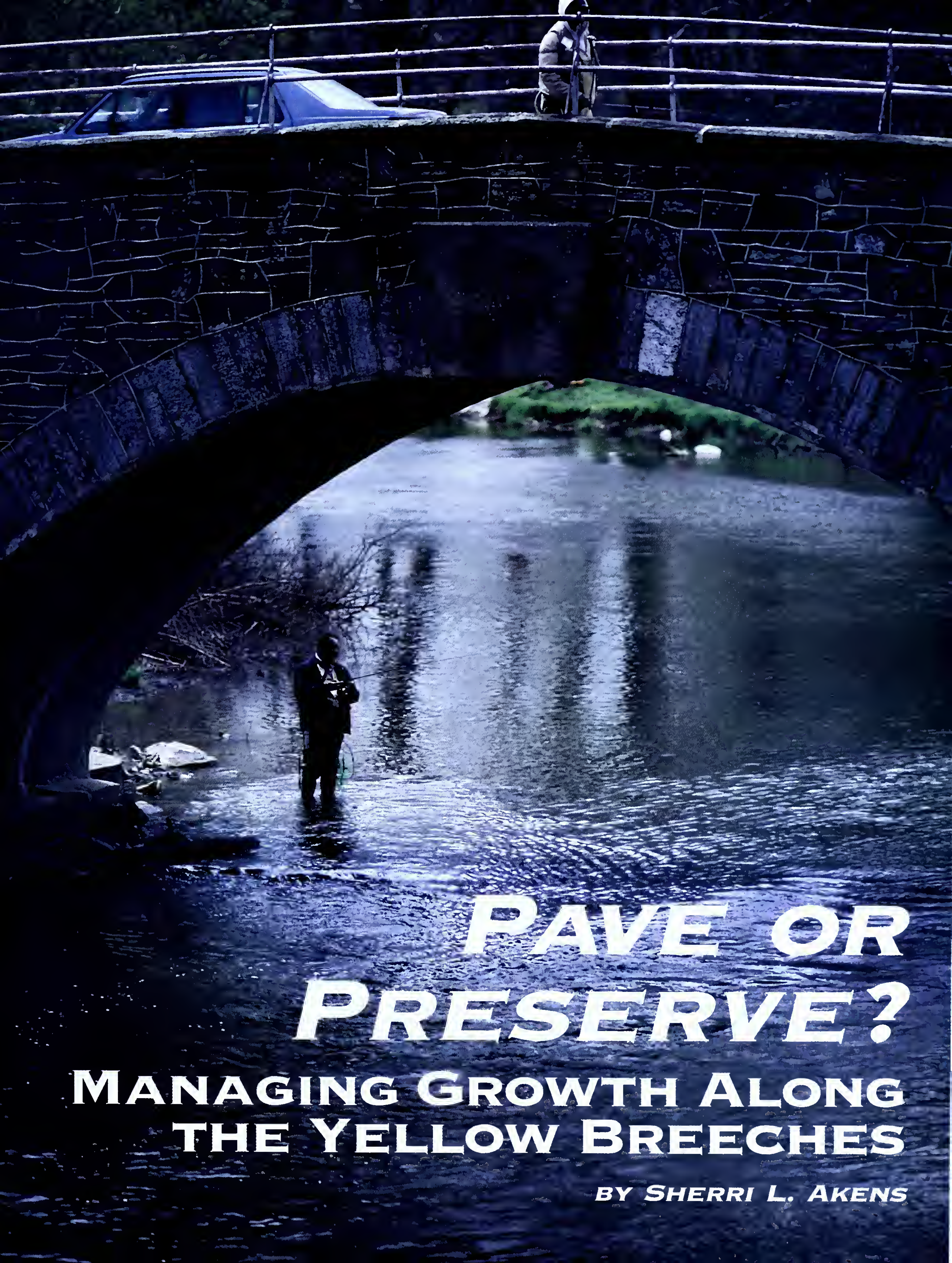
Answer = 353

Sherri L. Akens



PAVE OR PRESERVE?

MANAGING GROWTH ALONG THE YELLOW BREECHES

BY SHERRI L. AKENS

In the folds of Pennsylvania's Blue Ridge, nestled in the Michaux State Forest, crystal water bubbles from a spring. Not much more than a steady trickle, it flows off the mountain and becomes a full-fledged creek—the Yellow Breeches—near the town of Walnut Bottom.

The creek flows past the rural farmlands of Huntsdale, by Mount Holly and Boiling Springs, and through suburban Grantham and Lisburn, and then it empties into the Susquehanna River at New Cumberland. At journey's end, the creek extends upstream a distance of nearly 60 miles, draining an area almost four times that large.

During the 1700s the creek was home to members of the Leni-Lenape, Shawnee and Delaware Indian tribes. The tribesmen and women lived on its banks and the creek provided trout, bass and panfish. They called the waters "Callapassink," meaning "the stream with many rapids and horseshoe curves."

B & C Beck

Later in the century, the area began to be inhabited by settlers of Scottish-Irish descent and later still, those of German and English heritage. The new residents dubbed the waters "Yellow Breeches," a name rumored to hail from the discoloring features of the water and soil.

The newcomers turned away from the aesthetic values of the creek. The Yellow Breeches' monetary offerings became more prevalent. The water was dammed and its power was harnessed to run the mills now found along its banks. Among them were saw, grist and merchant varieties.

The settlers, of course, also used the meandering stream as a water supply. They were farmers of the rich and fertile soil of the surrounding Susquehanna Valley.

Some historians and bits of folklore point to the Yellow Breeches as what may have been an ancient spawning ground for the American and hickory shad species. This could have been true, though very dependent on the early conditions of the stream, and the point at which the milling dams came into the picture.

This tale is stunning, compared to the state of the shad in the present-day Susquehanna and its seasonal home in the Chesapeake Bay. Today our need for hydroelectric power has led to the construction of four dams on the Susquehanna and in turn the near elimination of anadromous fish from their upper Susquehanna spawning and nesting habitat.

From the 1900s to the 1930s, shad were the most valuable finfish caught in the Chesapeake. In 1980, Maryland imposed a moratorium on shad harvesting. In May 1979, the species economic value was almost 40 cents a pound, and the last harvest of Chesapeake Bay shad measured about 53,000 pounds, a drastic decline from the 15 million-pound catches made in the early 1900s.

Dismal as this case may be, turning back to the shad's legendary home, we find a somewhat similar picture.The Yellow Breeches is not classified by Pennsylvania's Department of Environmental Resources (DER) as a "high quality/coldwater fishery." The creek provides a home for brown, brook, rainbow and palomino trout, and a variety of other fish, including smallmouth bass, chain pickerel, carp and panfish. It is also home to frogs, salamanders, toads, snakes; a host of birds including golden eagles, hawks, herons and owls; mammals, both small and large; and nearly invisible water creatures.

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Today the creek is still used as a source of power and public water for many of the residents of the surrounding townships. The land is still used in spots for farming, although many of the historical farms are now suburban developments. Now, at the turn of the decade, we should not focus our attention on what the creek is giving to us. What we are doing to the creek requires some thought.

High rates of development

The Yellow Breeches watershed is located in an area of southcentral Pennsylvania that is currently experiencing enormous residential and commercial growth. This growth has increased the demand and the stresses put on the Yellow Breeches and its aquatic life.

The population of the Yellow Breeches watershed area has increased substantially since the end of World War II. According to the Susquehanna River Basin Commission (SRBC), Hampden, North Middleton, Upper Allen and Fairview townships are all experiencing high levels of residential construction. Whereas the boroughs reached their peak populations in 1970 or earlier, because of postwar suburbanization, the townships surrounding the Yellow Breeches have continued to grow as large tracts of land, formerly used for agriculture, are converted to residential and commercial areas.

Habitat destruction is the major threat to the fish populations found in any watershed faced by untethered development. Most habitat destruction is a result of sediment loading of the stream from surface, or non-point, runoff. This runoff contains sediments and pollutants coming from dwindling farmlands, and multiplying lawns and pavements.

Excessive sediment smothers the gravel of spawning areas, and decreases the depth of the stream, leaving less living space, and raising water temperature. Nutrients in fertilizers running off croplands and residential lawns promote the growth of algae near the water's surface. This growth blocks sunlight, and plants rooted on the creek bottom die. Decomposing plants and algae cause excessive use of vital oxygen in the water. The high dissolved oxygen content of the Yellow Breeches is very important to trout life in the creek.

The control of non-point runoff has been increasingly recognized lately as a problem facing the Yellow Breeches. Surface runoff from agricultural fields, housing developments, urban areas and industrial complexes make up the highest mass loadings of nutrients and toxics into the Yellow Breeches. Municipal and private sewage treatment plants, industrial manufacturers and fish hatcheries are the major point sources discharging into the Yellow Breeches.

Non-point pollution

Before development of a piece of land, only natural vegetation exists. Forests, shrubs and grasses allow much of any type of runoff to be filtered into the ground. However, after development, driveways, rooftops and other impervious surfaces reduce the amount of runoff that can infiltrate into the ground, thus generating more runoff from the site. For moderately developed conditions, such as a suburban area with quarter-acre-lot homes, there is an increase of some 50 percent in the amount of runoff.

Roads, driveways, sidewalks and other normally unrecognized instruments of pollution collect oils and other toxic substances like heavy metals and lawn and garden products. In the case of the Yellow Breeches, as in other waterways, when rain falls on these impervious surfaces, the pollutants eventually wash into the nearby creek. Nutrients, sediments and toxics wash off the land and into this arm of the Susquehanna. These pollutants include nitrogen and phosphorus applied to the valley's crops as fertilizer, and excess pesticides and herbicides.

Other contributors include sewage treatment plants that may release phosphorus, nitrogen and toxics into neighboring waters, and erosion from construction sites. Toxics in the form of metals and chlorinated organic compounds also come from municipal wastewater treatment plants located along the creek. Toxics create various stresses for aquatic life, including declines in reproductive success.

What's being done

With the trend of increasing development in the eastern end of the Yellow Breeches watershed, extending from Mount Holly Springs to New Cumberland, non-point runoff will continue to be the major cause of lost aquatic and riparian habitat. It will also continue to contribute to the excess nutrients and sediments that Pennsylvania streams and rivers load into the Chesapeake Bay. Proper controls and sound environmental planning must be incorporated throughout the Yellow Breeches watershed to maintain the stream's current water quality and aquatic resources.

Pennsylvania's Clean Streams Law requires control of erosion from construction sites through use of erosion control plans for any land-disturbing activity. In connection with this law, developers must limit the post-development runoff rate from a construction site by using features such as runoff catch basins and sedimentation fences.

These tools help maintain the characteristics of nearby streams by slowing velocities and the amount of runoff flowing into receiving waterways. Although these requirements are helpful, developers rarely consider the water quality issues that are also important.

Some areas of the Yellow Breeches watershed have historically suffered from groundwater contamination. The characteristics of the ground rock allow a steady groundwater flow into the Yellow Breeches throughout the year and provide a direct conduit for contaminants to pollute the groundwater.

Most of these instances can be traced to high nitrate levels, probably caused by a combination of farming practices and malfunctioning septic systems. According to some DER studies, the increasing pressure to develop the land in the Yellow Breeches area will only increase the chances of groundwater pollution. Sound environmental land-use planning can decrease the threat of future groundwater contamination.

Pennsylvania farmers are working with state programs, like the Pennsylvania Chesapeake Bay Program, to keep excess nutrients, soils, pesticides and herbicides out of waterways. Nearly half the program funds go directly to farmers for the cost-sharing of best management practices (BMPs) that reduce agricultural pollution. BMPs include building manure pits, using manure as a natural fertilizer—instead of buying chemicals—using less pesticides, and conserving soil by using terracing, contour plowing and strip cropping.

What you can do to help

There are numerous ways that everyone can help improve and restore not only the Yellow Breeches, but all of Pennsylvania's waterways.

Homeowners can help outside the house by using brick, flagstone, gravel or crushed stone for walkways or driveways, instead of concrete and asphalt materials. This helps increase infiltration of rainwater, and reduce erosion and runoff. Installation of drain spouts that empty water onto the lawn, not the pavement,

B & C Beck

and protection of soil around the drain by using splash blocks, also reduce erosion.

Cutting back or eliminating the use of fertilizers and pesticides on lawns and gardens means less runoff of these chemicals into nearby storm drains, creeks and streams. Planting trees, grass and other ground covers along creek and stream banks establishes a buffer zone for chemicals and eroded soil. A better idea is to keep these areas as undisturbed as possible when building or expanding your home.

Forested areas and water quality go hand in hand. The forest floor acts as a filtering sponge and soaks up rainwater and nutrients, instead of letting runoff go directly into a waterway. The amounts of nitrogen and phosphorus entering the water from forested land are anywhere from 10 to 30 times lower than runoff from developed areas.

Keeping an eye on septic tanks to make sure they are operating properly, and having the septic tank pumped periodically, at most every three years, would cut down on the chances of groundwater pollution. Signs that your tank is overdue for maintenance include sewage odor near the tank, slow-running drains and toilets, and sewage on the ground over the drainage area.

Water-use habits

For the counties and municipalities surrounding the Yellow Breeches, widespread reduction of water usage can lessen the need for new or expanded sewage treatment facilities. Money saved from not having to expand can be used to upgrade the water treatment at existing plants. A 15 to 20 percent reduction in water consumption can be established without major discomfort or expense by changing to conservation-minded water-use habits.

The first step is to check for and repair leaks. Other procedures include running dishwashers and washing machines only for full loads. If you have a garbage disposal, use it sparingly. Disposals use much water unnecessarily and are the largest contributor of solids to sewers and septic tanks. Wash your car on the grass instead of the driveway, and use phosphate-free soap. In the bathroom, homeowners can install water-savers in the toilet and in the shower, and never let the tap water run while brushing teeth or shaving.

Homeowners should use caution when disposing household hazardous wastes. Never pour pesticides, paint products, antifreeze and other toxics down the drain. They can travel right through some sewage treatment plants, like those found along the Yellow Breeches, which are not equipped to handle all kinds of toxic materials. If you have doubts on how to get rid of a product safely, call your local authorities.

Carpooling, using mass transportation and simply cutting back on the use of automobiles are becoming more noticeable improvements to the environment. But many people still balk at mass transit, or don't live close enough to where they work to take advantage of it.

To date, 55 bridge crossings can be found along the Yellow Breeches, including busy interstates and railroad crossings, and suburban and rural roads. More people and more housing developments in the Yellow Breeches watershed would no doubt mean more roads. More roads would bring more litter, and more of the physical effects on the stream from roads already in place. These difficulties include storm water runoff carrying roadway pollutants and accelerated soil erosion caused by the increased stream velocities associated with bridge sites.

The future

Trout fishermen across the Commonwealth and the United States consider the Yellow Breeches to be an excellent trout stream. The fish living in this stream have been managed since 1932, when brown trout were stocked in the segment of the creek that extends from Huntsdale to the mouth. Today, the Yellow Breeches classification as high-quality water means that it has features requiring special water-quality protection.

This protection may well be difficult. According to the Susquehanna River Basin Commission, the area surrounding the Yellow Breeches has inherently shown a rate of population growth several times faster than the rest of the state. If the Cumberland Valley is developed to its legal maximum under the current zoning of the various municipalities, its population would increase from the current 191,400 to 728,000—an increase of 280 percent.

Warning signals that areas of the Yellow Breeches are in danger can be picked out by anyone, not just fishermen. Some signals that are easily seen include newly eroded and undercut stream banks, abnormal growth of underwater vegetation, algae blooms, dead fish, and muddy water or water with an oily sheen. These signs are all red flags that the creek needs help.

Signs that may be noticed only by fishermen are losses in amounts and diversity of insects and macroinvertebrate life. For example, pollution-sensitive organisms like caddises, mayflies and stone flies. And there could be noticeable increases in organisms that are more tolerant to pollution, such as black flies, dragonflies, sowbugs and leeches.

In the book *Bay Country*, author Tom Horton writes, among other topics, about saving the Chesapeake Bay from destruction. He calls for more information-sharing to help reduce the alarming lag between recognizing a problem and doing something about it—"somehow we have to avoid that kind of time lag or it will do us in." In these words is some advice appropriate to the present state of the Yellow Breeches Creek.

And the shad?

If you believe in legends, then it's hard to think of shad never again being able to use the Yellow Breeches as spawning and nursery grounds. Even if the water quality were to remain unchanged or perhaps improve, and the shad were able to swim up the Susquehanna to the mouth of the creek, dams still block flowing water throughout the Yellow Breeches that would probably prove impassable.

River and herring were the Susquehanna watershed's second most valuable migratory fish in the early 1900s. These fish and the American eel are a little more agile than American shad. It is possible that they might be able to use the creek in the future.

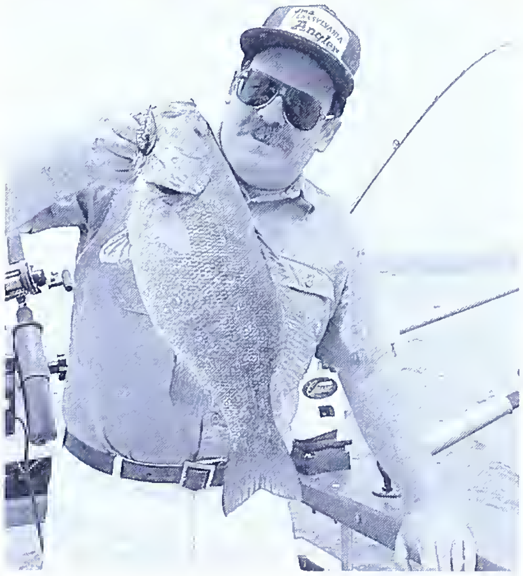
Establishing the Yellow Breeches as an almost certain home for the herring and the American eel all depends on getting these species and the American shad back up the Susquehanna River. It is now impossible for any anadromous fish to make it to the Yellow Breeches. The Susquehanna River is almost 450 miles long, and only 10 miles are available for spawning—the rest is blocked by the Conowingo, Holtwood, Safe Harbor and York Haven dams.

It will take the commitment of everyone in the Susquehanna watershed to keep the species here, if and when they return. We need to stop choking our waters with toxics, soils and surplus pesticides and herbicides. We need to help restore waterways where need be, and to adopt an everyday mindset that allows our waters to be clean and clear—indefinitely.

Sherri L. Akens researched and wrote this article as part of a fellowship in the Chesapeake Bay Foundation.

Dave Wolf

Kenneth C. Sink (right), of Indiana, PA, received the first Ralph W. Abele Conservation Heritage Award last April from Commission Executive Director Edward R. Miller. This award memorializes former Fish Commission Executive Director Ralph W. Abele by recognizing Pennsylvania citizens who have made contributions to the protection, conservation and enhancement of Pennsylvania's aquatic resources. Miller praised Sink's leadership in Trout Unlimited, and his work with Rotary International, the Boy Scouts, the Indiana County United Way, Camp William Penn, Spruce Creek Rod and Gun Club and the Pennsylvania Environmental Defense Foundation.



Michaels Wins Lawton Award

Last May, *Pennsylvania Angler* and *Boat Pennsylvania* editor Art Michaels won the 15th annual Captain Fred E. Lawton Boating Safety Award, which honors a media professional making the most significant contribution to boating safety. Michaels was recognized for work as an editor, writer and photographer. The award, sponsored by Raytheon Company, included a $1,000 honorarium, a pair of Waterford crystal captain's decanters and a commemorative certificate.

Russ Gettig

The Fish Commission's Penns Creek Project in Mifflin and Union counties was recently dedicated as the Ralph W. Abele Memorial Glen. Mrs. Peggy Abele (pictured above), family, friends and staff helped dedicate the 430 acres to the memory of the Fish Commission's former executive director from 1972 to 1987. Engraved on the memorial cairn are Ralph Abele's own words: "We are a conservation organization, believing strongly in the tenet of the wise use of our natural resources. We intend to keep on that track in our concern with the resources for which we are responsible, and the misuse of which can have an adverse effect on the whole quality of life both now and in future years."

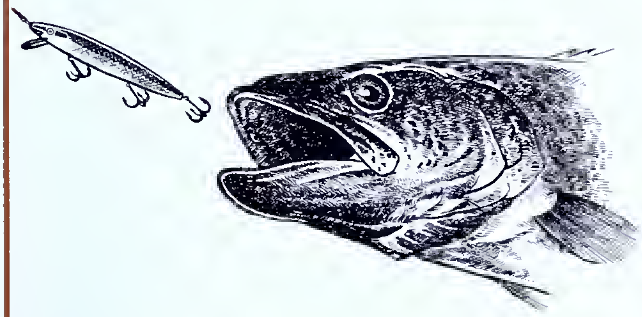
ANGLERS CURRENTS

Art Michaels

Meet Mary Stine, chief of the Fishing License Section. With her staff, she is responsible for collecting, accounting for, and depositing money generated from the sale of fishing licenses and trout/salmon stamps. Mary works closely with approximately 1,700 fishing license issuing agents comprised of county treasurers and private businesses. Mary came to the Commission in September of 1967.

Angler's Notebook

by Chris Dolnack



Walleye are often found on large, open flats with submerged weedbeds. The marauding schools chase baitfish through the weeds and readily hit slender crankbaits.

During the extended trout season the water is usually low and clear. Use light line—two- or four-pound-test—and light-wire hooks to fish live bait.

Cool fall nights lower the surface water temperature, causing the water to sink. The mixing process is called "turnover." Signs of a lake turning over include rotten vegetation on the surface, a foul smell and cloudy water.

Panfishing turns on again when cooler weather prevails—an ideal time to take children fishing. Fishing a micro-jig below a small bobber is all it takes to make an angler for life.

Don't break your line if you snag on submerged structure. The weight of the lure often frees the lure if you pull up with a quick jerk and let the line go slack.

Trolling live bait on a spinner rig is a slow but effective way to find fish. If you locate a school of walleye or perch by trolling, switch tactics and work the school with jigs or crankbaits.

Carry a safety pin or two attached to your fishing vest or hat. They are handy for untying knots, removing paint or varnish from the eye of a jig or fly, and a host of other things.

If you are taking your boat on a weekend fishing trip, don't forget to bring an extension cord to power your battery charger. Running the extension cord from your motel room beats having to remove the batteries for charging and replacing them in the wee hours.

Many gamefish species go on a feeding spree before the onset of cold weather. This binge may last from a few days to a couple of weeks, depending on the species and body of water.

Fall forage fish have grown all summer, so use larger jigs and crankbaits now. Contrary to what one might think, gamefish will readily hit larger lures, despite the cooling water.

"Patterning" fish is even more important to fishing success after the fall "turnover." The basic premise of pattern fishing is that if you catch a species of fish in a particular spot with a particular lure presentation, there are likely other fish in similar locations elsewhere on that waterway.

Casting spinnerbaits into reeds or cattails at the back of a cove is an effective early fall largemouth bass technique. The sun warms the shallow water quickly, and the stalks provide cover from airborne predators and ambush points to waylay baitfish.

When smallmouths are reluctant to hit after a cold-front, try a jig-and-minnow or jig-and-crayfish combo.

illustration- George Lavanish

PENNSYLVANIA FISH COMMISSION

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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Last Chance for Largemouth BASS

by Darl Black

It was a stern warning. "You're going to regret writing about late fall largemouth fishing"—this from an angling acquaintance.

From the tone, I wasn't sure if it was a threat to my person or simply that I would regret encouraging more anglers to join us on the water. But just to be sure, I checked that my hospitalization was paid up before beginning this article.

There seems to be a belief among many Pennsylvania anglers that bass quit feeding in the fall. Even the banners and banter of bass tournaments disappear by mid-October in Pennsylvania. If those cast-for-cash-and-glory guys aren't beep-bopping about the water, well, isn't that a sure sign that bass are not biting?

Grab hold of your electric socks. Largemouth bass can be caught well into the fall while water temperatures are dropping toward freezing. Some mighty fine specimens may be taken, too.

However, if you are thinking about extending your bass season, don't expect a lot of help. There are very few bass anglers on the water at this time of the year, and some of them are pretty tight-lipped about what they are doing. So if you want a crack at that last-chance largemouth, listen up.

Setting the scene

Let's target a particular type of water found in almost every area of the state—a reservoir. Not a natural lake or river, but a typical Pennsylvania impoundment of between 500 and 5,000 acres. I'm not going to name names, but by the general description I am sure you can find a waterway like it in your area.

The deepest water in these impoundments may be 20 feet, or 40 feet, or perhaps over 60 feet. They have relatively gentle shoreline contours, built over lowlands or in rolling terrain.

Of course, the impoundment must have a strong largemouth bass population. Largemouth fishing in the late fall is a matter of precise presentation to concentrations of semi-active fish. Unlike summer when largemouth feed frequently, in chilly water fewer bass are in the mood for a meal at any given time. If the reservoir you select has a marginal bass population to begin with, well, you are fishing low percentages—like seeking a needle in a haystack.

To define this time better, it is late October to late November or early December in Pennsylvania. In the southeastern part of the state where the climate is milder, bass may not move into this pattern until November and the fall bite may carry well into December.

My success or failure each fall rests squarely on the weather. If it is a normal fall, largemouth fishing can be good. If there is an extended period of genuine Indian summer, bass fishing can be fantastic. However, if windy, cold weather sets in early with storm front after storm front rolling through and the water temperature falls quickly, kiss the largemouth bass good-bye.

Mapping it out

If available, obtain a hydrographic map of the lake. You need to see contour lines and creek channels. If such a map is not available, hopefully you know the lake well enough to visualize the following instructions in your mind.

First, with a red marker, trace a 30-foot contour line around the reservoir. If the lake isn't 30 feet deep, just skip this step. Next, trace the 10-foot contour line with a green marker. If the impoundment has substantial weed growth, trace the contour line that is closest to the deep weed edge in green rather than the 10-foot line. The area between the green and red lines establishes the primary depth range to target, 10 to 30 feet. On a reservoir shallower than 30 feet, your bass search may take you to the deepest water in the lake.

Now that's not to say you aren't going to catch a bass shallower or deeper, but during this period on most Keystone State impoundments you find the majority of largemouth bass somewhere in that depth range.

Remember, too, this advice from experienced deepwater anglers: It is easier to make lure presentations quickly and efficiently to shallower water than to deeper water. In other words, it is easier to find and catch bass in 10 to 15 feet than 25 to 30 feet. Move deeper only if you can't locate the suspected fish-holding structure in the shallower range.

Structure

There is that word structure. What does it mean? Structure refers to physical changes in the bottom configuration of a lake. Many things are regarded as structure, including weed lines, channel edges, points, saddles, deltas, flats, rockpiles, bluffs, bottom composition changes, brush lines, roadbeds, ditches and more.

Largemouth bass can be caught well into the fall while water temperatures are dropping toward freezing. Some mighty fine specimens may be taken, too.

Darl Black

During the summer, many largemouth bass anglers succeed without much attention to the details of structure. Shallow cover (as opposed to structure) is usually more important. Largemouth are relating to vegetation, if available, or to cover on flats. Bass are moving about and chasing bait on a daily basis. But come fall, those bass seek stability in deeper water. They school tightly and shift to specific structures.

What do you look for starting in late October? The deepest green weeds are always a starting point. However, vegetation in dingy-water reservoirs rarely grows deeper than six or eight feet. By November, these shallow weedbeds are usually past the point of attracting largemouth. The next move should be to the nearest dropoff.

What constitutes a good fall dropoff? Does it need to be a 10- or 15-foot drop? Absolutely not. Dropoffs as slight as three feet may be sufficient—it is relative to the overall bottom characteristics.

Personal experience points to two key ingredients for fall structure— the sharpness of the drop and the cover on the drop. Gradual breaks are out. A sharp break of nine to 12 feet with a few stumps is more likely to hold a group of largemouth than a gradual slope breaking from nine to 20 feet.

Creek channels enter the picture at this point. Creek channels serve as major winter sanctuaries for largemouth bass in shallow reservoirs, as well as the holding area for baitfish schools during cold water. Creek channel edges feature the sharp breaks, which bass seem to prefer at this time.

But the fish do not spread up and down a channel. Instead they concentrate at particular sites. Wood is a big draw. The wood may be stumps of old trees along the bank where root tentacles overhang the channel. It may be a sunken log that breaches the edge, lying at an angle from the bank into the channel. Or it might be brush piles placed by anglers to attract crappies.

Nothing is written in stone about lures, presentations and strategies—nothing except that you can't get those bass if you're not out there fishing for them.

Rock and concrete do not attract bass nearly as reliably as wood, but rock and concrete are still definitely worth investigating. Old road abutments are the main source of rock or concrete along a creek channel.

Sharp turns in a channel or the merging of a feeder channel into a larger creek are prime spots, even if the cover situation is not impressive.

Are creek channels the only sites that hold largemouth? Certainly not. In the upper regions of the reservoir and in large, shallow bays, the channels are the most important spots. Farther down the lake toward the dam, the creek or river channel may be too deep. Investigation of the lower lake area would probably reveal flats or tapering points that drop sharply into deeper water, exhibiting the same characteristics as creek channels.

Some anglers are probably wondering how to find all this underwater stuff. With a depthfinder. Do not expect to succeed at late fall bass fishing without one. The unit does not have to be an expensive one, but it must show accurate detail and you must be able to interpret the readings. I remain a throwback to an earlier time because I continue to run flasher units while many others look to the latest liquid crystal gadgetry.

Darl Black

What to throw

Look at lure selection for fall largemouth action as a straining process. Throw everything into the hopper at the beginning, and in the end the best two or three lures for taking fish filter through.

In early October when many largemouth bass are still relatively shallow, you can use almost any type of lure to catch fish, including topwater offerings. But as the water chills and bass begin the exodus toward winter sanctuaries, the number of productive baits narrows.

When reservoir bass set up on the offshore dropoffs and creek channels in late October, my lure choice has already been reduced to deep-diving crankbaits, lipless rattle baits, single-blade spinnerbaits, jig-and-pig, blade baits, and an assortment of soft-plastic grubs and four-inch worms on jigheads. That's still a pretty good selection of lures.

Crankbaits and rattle baits are great search baits for fall, but don't work them too fast. Crankbaits are at their best when they occasionally bump the bottom or stumps. Therefore, choose ones that are capable of reaching the depth you are fishing; otherwise, switch to another lure.

Rattle baits produce in cold water when they are fished with a slow sweep-and-stop motion—somewhat more akin to jig fishing than cranking. Because it is a sinking plug, a rattle bait can be fished as deep as you have the patience to work it.

I prefer to slow-roll a spinnerbait (white skirt and trailer with a single blade) through the cover on the edge of dropoffs if crankbaits constantly hang up. The slow fall of a jig-and-pig (frog cut only, please) is the best bass bait for dropoff fishing.

When the water temperature reaches the mid-40s, bass pass up most lures. The fish's metabolism has slowed. Largemouth bass are taking very selective offerings—usually something small and within inches of their noses.

It's time to concentrate on grubs and small worms. Boot-tail grubs, such as Mr. Twister's sassy grub, are my favorites at this time. Wide, curl-tail grubs may be productive if the tail is thin and very pliable so that it provides good action at very slow retrieves. The worms are short with straight tails.

All these baits are three or four inches long, and fished on a 1/8-, 3/16-, or 1/4-ounce leadhead. Jigs heavier than 1/4-ounce drop too quickly for slow-swimming retrieves. Top colors are subdued ones, such as avocado, smoke, smoke pepper, pumpkin pepper and grape. But clear/silver sparkle, firecracker, lime chartreuse, and chartreuse pepper sometimes achieve responses from the fish, so don't count on the subtle colors 100 percent of the time.

Keep it slow. Use either a steady do-nothing retrieve just skimming the bottom, or a lift-and-drop retrieve in which you lift the bait no more than two feet off the bottom and let it swim back.

Of course, "grubbing" is the basic tactic when you find a fish-holding area. But to find the exact bass site along a likely stretch of structure, I usually start with a blade bait.

Blade baits are compact and sink quickly, but with little action on the drop. The attraction of a blade bait is the wild vibration on the upsweep. It is a perfect vertical jigging lure, worked directly under the boat with upward rod sweeps that move it about two feet off the bottom. Most strikes occur as the bait falls back to the bottom following a sweep.

Usually only the most aggressive largemouth bass hit a blade bait in 40-degree water. But if you catch one bass, fish the area thoroughly with a grub.

This is my formula for late-fall largemouths. There are, of course, exceptions. It would not be fishing if there weren't exceptions. I know some anglers who depend solely on a jig-and-pig for that very last fish of the season. During a late November warming trend, I have seen deep-diving crankbaits produce. Other fishermen use jigging spoons.

Nothing is written in stone—nothing except the fact that you can't get those last-chance largemouth bass if you're not out there fishing for them.

Figuring Out What the Fish Are Doing:

An Interview with Mike Kaufmann

by Art Michaels   photos by the author

> "Some waters in southeastern Pennsylvania are outstanding for muskellunge—and I do mean outstanding. Blue Marsh Lake is probably underutilized for musky fishing."

Mike Kaufmann, Fish Commission Area 6 fisheries manager, knows southeast Pennsylvania's waterways intimately from both a professional and a recreational standpoint. Kaufmann is a 14-year veteran of Fish Commission service, and he's an avid fisherman and impassioned conservationist.

Join me with Mike in my boat on a balmy May afternoon. While we fished for shad in the Delaware River, Mike spoke frankly about his job, the anglers he serves, the resource he manages, his successes, his failures and the Commission itself.

Art Michaels: What's up and coming in your region? Any secrets you can reveal to the public that they don't know yet?

Mike Kaufmann: Not only are the striped bass hybrids taking hold and doing very well in Blue Marsh Lake, but they are also doing well in Lake Nockamixon.

AM: So we're letting the cat out of the bag here, right?

MK: That's right, to a degree. Locals are aware of the action, but I wouldn't say that it's been published anywhere that the striped bass hybrid fishery is as good as it is becoming. In addition, the striped bass hybrid fishery is turning on at Lake Clarke on the Susquehanna River.

AM: What do the surveys show?

MK: We haven't picked them up in the Lake Clarke surveys. They've been stocked, but the fishermen started catching them this past year.

AM: How big are they now?

MK: They're around 18 to 20 inches—in that range, so it's just starting. In the case of Nockamixon and Blue Marsh, we're talking about fish that are anywhere from the size limit, which is 15 inches, up to 29 inches. That means they're ranging up to 17 pounds.

AM: What other secrets can you reveal to readers?

MK: There are some waters in southeastern Pennsylvania that are outstanding for muskellunge—and I do mean *outstanding*. Blue Marsh Lake is probably underutilized for musky fishing.

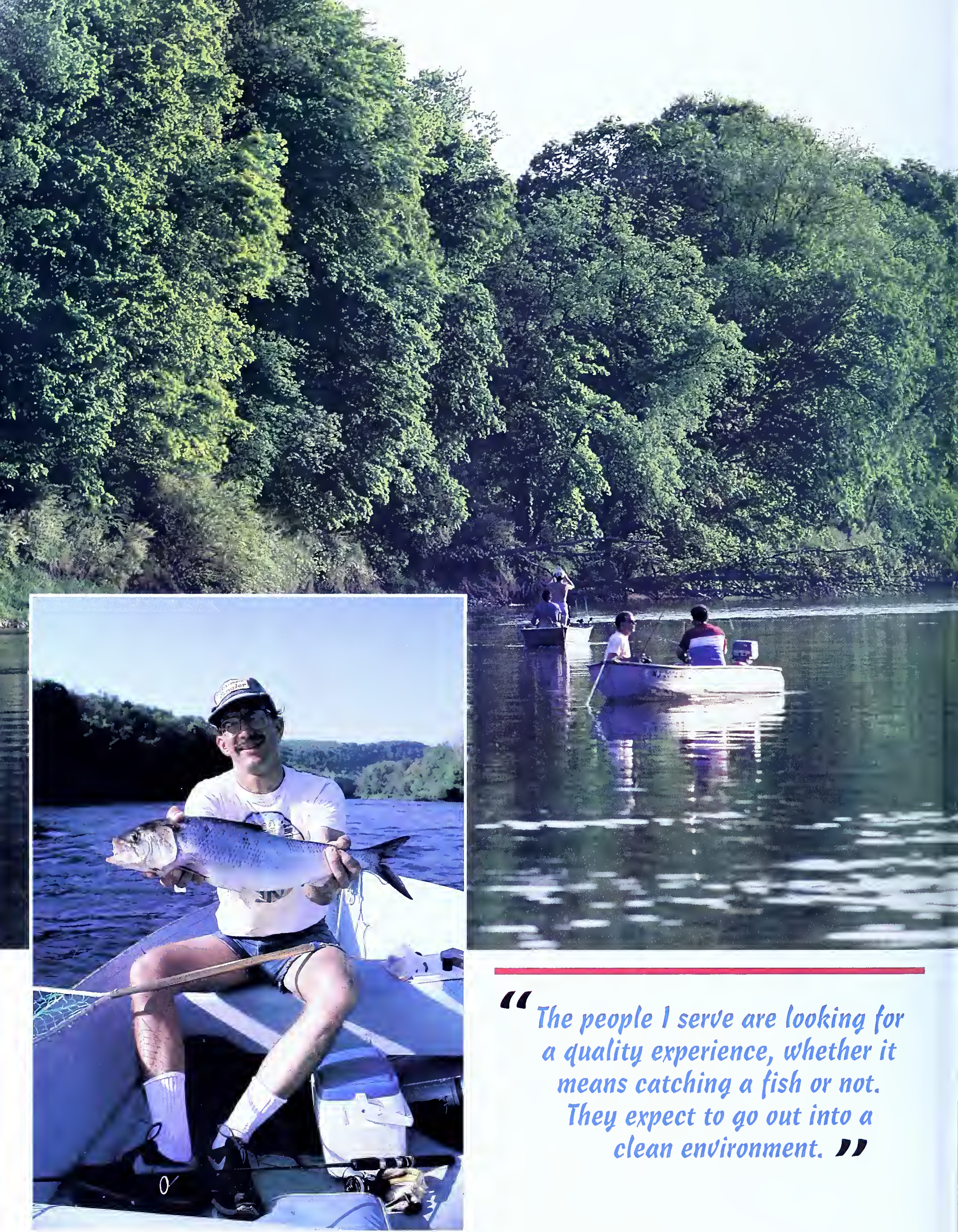
AM: When is a good time to fish for muskies there?

MK: According to our creel clerk, year-round.

AM: Year-round? Where?

MK: One fellow was doing very well with muskies trolling spoons in the southwest portion of the lake. When we survey Blue Marsh we find them almost everywhere.

The lagoons at Darby Creek are another muskellunge fishery that's coming on and isn't well-known. You don't necessarily need a boat to get to it, but you should have a boat.



> "The people I serve are looking for a quality experience, whether it means catching a fish or not. They expect to go out into a clean environment."

AM: Mike, if you could change one thing about the Commission, what would it be?

MK: I would change the anniversary date for a fishing license. Right now the anniversary date is January 1, but I'd change it to April 1 and allow people to start fishing on March 1 with the new license. The reasons I would do that are from an operational standpoint and as a service to sportsmen.

AM: Give me an example—when would I have bought a license for this year?

MK: You would have purchased it on March 1 and started using it, although it would really be effective April 1.

AM: What's the value of this idea?

MK: Many regulations that we ask the Commissioners to act on for the following fishing license year have to be acted on by July. But many of the studies that take place aren't even beginning, or are just initiated by July. So to be most responsive to what we find in the fisheries, we should be able to implement regulations half a year after we find a problem, rather than a year-and-a-half after we find a problem.

A good example would be this past year. Our executive director requested emergency regulations on smallmouth bass for the Susquehanna River system. With that package was a 12-inch statewide size limit based on years of Fisheries Management studies. If a license would have gone into effect in March and therefore a summary booklet published a quarter of a year later than it's currently published, that regulation might have made it into the summary booklet and it would have been immediately responsive to what had been found in the previous years' studies.

AM: If you could have any other job anywhere, what would you do?

MK: That's a hard one for me because I always wanted to be a wildlife manager or a fisheries manager.

AM: When did you decide you wanted to do that?

MK: In 1970, which was my freshman year in college, I went to Penn State—Berks Campus the first year and University Park after that. This was followed by graduate school at Penn State and Clarion universities. I earned a master of science degree from Clarion University in 1977.

My interest was in wildlife management and I switched to fisheries for very practical reasons. I was interested in fisheries but more interested in wildlife at the time. When I went to college, there were more jobs in aquatics than there were in terrestrials. So I just changed interests from managing wildlife to managing fish.

AM: Mike, what are some of the successes you've had and accomplishments in your 14 years on the job?

MK: Creation of the Tulpehocken trout fishery below Blue Marsh Lake in the tailrace of Blue Marsh. Switching from an adult program to a fingerling program there. Working on this project with Trout Unlimited, the Corps of Engineers and also the Berks County Parks System—because it's their land also—but working with the Corps of Engineers mostly to try to get the best possible water temperatures for the trout population that we could. "Best" meaning the coolest possible water temperatures for the longest time through the summer to try to get those fish to carry as long as possible into late summer.

AM: What else?

MK: Improvements in bass populations and theoretically, then, in bass fishing in a number of southeast Pennsylvania lakes, such as lakes Redman and Williams, by using more conservative regulations.

AM: When did that happen?

MK: The initial survey on those two lakes was done in 1983 and the 15-inch size limit and two-fish creel limit was implemented in 1987 as part of the conservation regulation program.

AM: Any other successes?

MK: When I was a summer worker in 1979, I had proposed that the Commission establish a free fishing day to promote fishing, and one was implemented here in Pennsylvania back in 1985 or so. I don't think it was well-known that the idea came out of Fisheries Management. The nice thing about it is that no matter where the idea came from, it was a success.

AM: Any other accomplishments?

MK: In the past 10 years in southeastern Pennsylvania we've added approximately 70 miles of stocked trout streams to the trout stocking program, and we've only taken about 15 miles off the stocking list.

AM: What are some of your failures and frustrations?

MK: The most frustrating things to me are frustration with sportsmen and frustration with agencies.

AM: What do you mean?

MK: One of my greatest frustrations is trying to put trout streams on the stocking list, or trying to get properties open to stockings, or just open to access—for instance, access to the Delaware—and have sportsmen, particularly slob sportsmen, litter the place. As a result, we lose the stream or the access from our program. There's a lot of energy that goes in to interviewing landowners, trying to persuade them to allow sportsmen to fish on a waterway, claiming that you don't expect that they'll do too much damage to the property, explaining liabilities to the landowner and then having the sportsmen in one or two years turn around and ruin it for everybody.

AM: And frustration with agencies?

MK: Frustration with agencies, particularly DER and the Delaware River Basin Commission. In several cases, DER was pretty relaxed with enforcement of regulations dealing with waste treatment at municipal wastewater treatment plants.

AM: How do you feel about the people you serve?

MK: The people I serve are looking for a quality experience, whether it means catching a fish or not catching a fish. I think they expect to go out into a clean environment, into an environment that provides a healthy, family-type atmosphere. They expect to see beauty when they're out there, not only enjoy fish, but the surroundings that fish live in. They also expect, usually, to catch fish, and if they don't catch fish occasionally they blame it on the Fish Commission as opposed to blaming it on their own techniques.

But the general expectation I think anglers have is that they ought to be able to catch fish. I think that my expectations for them are slightly different and I think that as an agency, we have to make sure that the fish are there but not be expected to put the fish on the angler's hook.

Another failure is that we did not successfully develop a trout fishery based on fingerling stockings in Codorus Creek in York County, in the tailwaters of Lake Marburg.

AM: And you thought you could?

MK: Yeah, because the temperature stays down in the 50s almost all year long. But the problem was that we didn't really take into account the destruction of the habitat by a flood that occurred right after we started the program. We had a tremendous amount of silt and sediment wash into the stream and that pretty much destroyed much of the stream's habitat.

I also had an objective when I came to southeastern Pennsylvania to try to get many water supply impoundments open to public fishing. I haven't succeeded in getting any open.

AM: Impoundments such as?

MK: There are numerous lakes in Schuylkill County, and some lakes owned by Philadelphia Suburban Water Company.

AM: What would you have to do to get them open?

MK: I guess we would have to show the water companies that fishermen would not damage the quality of their water or the quality of the surrounding environment—and it would help if fishermen would show that they wouldn't litter, for one thing.

> "As a fisherman working as a biologist, I want to provide the best possible fishing for anglers."

Other failures are somewhat agency-related, but they are in southeastern Pennsylvania. We haven't put any more fishways or fish ladders for American shad on the Schuylkill River since 1979, but a success is that we are on the verge of completing fishway development on the Lehigh River. Even though the Lehigh is not in my area, I was happy to be part of the effort to put fishways on that river system. It just happened that they were changing area managers at the time, so I got called in to help out.

AM: How do you believe you can make a difference on the job and what do you want to accomplish?

MK: As a fisherman working as a biologist, I want to provide the best possible fishing for anglers. I realize there are some anglers who want big fish and there are other anglers who want numerous fish. I think we can take both approaches in waterways we have in the region. Some waters can be managed for good numbers of fish, but perhaps sacrificing the size of the fish, and other waters can be managed for larger fish.

AM: Mike, you grew up in the Reading area, right?

MK: That's correct. I went to Mount Penn High School on the southeast side of Reading—graduated in the class of 1970.

AM: What is it like to have grown up and live in the area of the people you serve?

MK: One of the most interesting things is that there are certain friends who go along with those waters. It's not just the water itself, but the friends that you fished with as well. They view those waters with somewhat the same perspective as you do. You see, I have many reliable sources who will speak openly about whether or not anything we've done has improved the quality of the fishing in that body of water. Or, if we haven't done anything and the quality of the fishing has declined, I know the perspectives of the people who I grew up with, and they know what the fishing was like years ago, as I do. They can tell me whether things are going downhill or not, and I can believe them because I know them well.

AM: So knowing these people personally helps?

MK: It can give you a big advantage. And being a fisherman gives you a big advantage, too. If you're a fisheries manager and not a fisherman, you're missing what I consider one of the more important immeasurable dimensions in your ability to manage a fishery.

AM: What's changed during the 14 years of your employment?

MK: There are a number of changes. With regard to trout, I think there's a much greater emphasis on wild trout. We've documented the fact that there are large populations of wild trout in Pennsylvania, and we emphasize wild trout in our management. In the years before my employment, wild trout really weren't even considered as an alternative to stocking, for instance, except in the Wilderness Trout Program.

On trout versus warmwater fish, when I first started with the Fish Commission the emphasis was heavily on coldwater fisheries. I think that some people used to jokingly call us the Pennsylvania Trout Commission, and now I think there's much more of a balance between warmwater and coldwater fish. We're not having trout carrying the entire bandwagon for the Pennsylvania Fish Commission. I think Pennsylvania is becoming noted for its warmwater fishing as well.

Oh, another one is in law enforcement—there has been a tremendous change in attitudes. When I first started with the Fish Commission, law enforcement was working on pollution cases as well as fish and boating law enforcement activities. But now law enforcement is emphasizing pollution much more than it did in the past, and it's collecting fines for pollution cases that are much more commensurate with the amount of damage that takes place.

The old fines used to be a slap on the wrist and the polluter looked at those fines as part of the cost of doing business. The new fine structure that I've seen, particularly in some areas in southeastern Pennsylvania, has definitely gotten the attention of the polluters. For a siltation case a developer was fined

$50,000. Probably 10 years ago that same developer would have been fined $250 to $500. An industry in southeast Pennsylvania was recently fined $100,000 for polluting a stream.

AM: What else has changed?

MK: Within the past 10 years, and probably more so within the past five years, the agency as a whole, and I think fisheries management in particular, has taken a lot more interest in what anglers have to say.

> "One of my greatest frustrations is trying to put trout streams on the stocking list and having sportsmen, particularly slob sportsmen, litter the place."

AM: The Commission?

MK: That's right. Not only about the Commission, but about agency programs and what anglers really want. The reason I say that is 10 years ago I don't think I saw very many opinion surveys. Now *Pennsylvania Angler* has run reader surveys, fisheries management has conducted opinion surveys, we've done four years of trout stream creel surveys, and we've done opinion surveys at expos. We're not only managing fisheries the way we think anglers want them to be managed—we're managing fisheries the way anglers like them to be managed, as long as there are no conflicts with the needs of the resource.

AM: What do you do in your spare time? What are your hobbies?

MK: Bicycling over longer distances. Some bicycle racing.

AM: Longer distances?

MK: Well, the longest I've ridden in a day was this past year, about 120 miles. I combine the bicycle riding with traveling. It's actually bike touring, and camping while touring—so I bicycle and travel at the very same time. I enjoy backpacking, day hiking—strenuous day hiking like climbing up into the Rockies or the Alps and coming back down in a day.

Fishing is definitely number one on the list along with biking. If you had to look at my spare time activities in a year's time, fishing and biking would dominate. I also garden. I do a little bird watching, too. During the winter, I ice fish, cross-country ski and skate.

AM: Who are your personal or professional heroes?

MK: Ralph Abele, for one.

AM: Ralph Abele? Why?

MK: Because he took a stand for the environment and he didn't allow politicians to push him around. You could pretty much predict the stand he was going to take on an issue, as opposed to being more politically motivated or flip-flopping on issues.

The other thing I thought was really commendable was that he always knew you. He knew his employees, and not just the employees of the upper echelon. He knew people right down to the summer workers. And as busy as he was, I thought it was pretty impressive that he knew most everyone's name in the agency. Yet, as tough as he could be environmentally, he was also considered to be a gentleman.

AM: How about personal heroes?

MK: I think Ralph Abele combined some of the professional and personal traits that I admire.

AM: Personal traits like what?

MK: Looking out for the little guy, for one thing. Not being impressed with someone's position of authority. Being friendly to all types of individuals and taking an interest in them. Being a gentleman under adverse conditions, when you really don't feel like being a gentleman.

AM: Mike, you're 39. Where do you want to be in 20 years?

MK: Retired and enjoying the outdoors. Traveling and fishing and seeing as much of the world as I can.

AM: How about in 10 years?

MK: I'd like to be working as a fisheries manager still if it remains as challenging as it is today.

AM: Let's talk about that challenge. What is the most challenging aspect of the job?

MK: Trying to figure out what the fish are doing and why they're doing it in different bodies of water, because you can sometimes apply what's happened in one waterway to another. But because systems are so complex, about the time you think you have it all figured out, Mother Nature throws you a curve and you're back to square one again. So if you have, say, 25 lakes in your management area that you pay closer attention to than some of the smaller bodies of water, there may be some similar problems in those lakes. But the lakes have different fertilities and they have different fish communities. They may all have small crappies and you may want larger crappies, but what you do successfully in one lake to produce larger crappies may not work in another lake.

Then you multiply those problems that you experience with one species by a whole gamut of species in a lake...let's say

> " My worst environmental fear for this region is loss of water flow combined with increasing use of those waters for assimilation of human waste. "

you're interested in improving the fishing for six or eight species. You're multiplying the problems by the number of management alternatives that you have and you end up with a very complex situation. What you do to benefit one species may hurt another species, and vice versa. So it's very challenging to go to a body of water, any body of water, and find out what the fish population is like and what its present status is and try to figure out whether or not it needs to be improved or how you can maintain its present quality.

AM: From what you know about this region, what do you fear environmentally the most?

MK: The loss of water flow combined with increasing use of those waters for assimilation of human waste. Both problems stem from increasing development and increasing population size and the demands that they place on the aquatic systems.

AM: The increased population, is that the key to your region?

MK: Yeah, from a fisheries manager's standpoint. If you have more fishermen, there's more pressure on the fishery, and you have to deal more with the direct effect of fishing on the fish populations and also try to maintain a quality fishery while still allowing people to fish and not limiting the number of fishermen that can use the resource. In terms of maintaining the quality of the environment for the fish, you need clean water for the fish to survive and reproduce, so we can have fishing, and you need a sufficient volume of clean water.

One of the problems I'm alluding to is that the human population growth will place more and more demands on the limited volume of water that we have in our streams, lakes and rivers as more and more of it goes to satisfy the thirst of the population in eastern Pennsylvania. Then more and more of it returns to these waters as treated or improperly treated sewage.

There's also a problem in southeastern Pennsylvania that hasn't received much exposure. Development is probably the biggest enemy of the quality of aquatic resources in southeastern Pennsylvania.

AM: Development?

MK: Yeah, that's right. If you're going to have development, you have to have the natural resources available to provide people with more than just an existence—they have to have some quality in their lives. The natural resources that are available in southeastern Pennsylvania in many communities are stressed to the point where they are showing that development is taking place. If you were blindfolded and taken to a stream, you could tell that there was development upstream somewhere, and you wouldn't have to know how much—you'd know by looking at the stream's degraded channel and aquatic life.

The big problem that I'm really thinking of from a quality of life standpoint is that everybody wants clean drinking water. With increasing development as a response to the increasing human population, you have greater and greater demands on the volume of drinking water and the quality of the drinking water. You also then have greater and greater demands on the quality of the environment that fish occupy. The Delaware River Basin Commission and the Department of Environmental Resources in concert issue permits for water withdrawals for drinking water purposes as well as industrial use, and they do that frequently without much concern for the amount of water that will remain in a stream. Aquatic life has a basic need for a certain volume of water in a stream—usually, in the Fish Commission we say 20 percent of the average daily flow. Without suitable flow, a stream cannot reasonably assimilate the waste that the people generate using the water as drinking water and eventually returning it to the stream as sewage. Even without the added burden of pollutants, low stream flow suppresses aquatic life.

I'll give you an example. There is a stream in southeastern Pennsylvania in the Neshaminy drainage where during dry periods 96 percent of the flow is treated sewage. There is no way that any stream should have 96 percent of its flow as treated sewage, because the treatment isn't that good.

AM: So what is the solution to your region's biggest problems?

MK: You identify the resources that are going to be stressed by being required to assimilate a certain amount of waste, and you eliminate or limit the amount of waste that you require that resource to assimilate. You also limit the amount of water that can be drawn from that resource for drinking water purposes, considering the requirements for aquatic life and waste assimilation. When you hit those limits you don't allow any more development to occur in that particular geographical area.

I'm not saying this is the case in all of southeastern Pennsylvania. I'm saying that this would help solve the problem in the areas that are stressed. You identify areas where the natural resources can support additional development and you identify those areas where the natural resources have reached their limit or are approaching their limit, and you stop the development in those areas.

I'm not anti-development—I'm anti-development in situations where the natural resources are already stressed.

On the Water

by Dave Wolf

Common Ground?

There are many meetings regarding the environment held across the state, and I attend many of them because of my position with the Commission. Some are sportsmen's groups, others are professional organizations related to the outdoors. Most are interesting affairs, but some are simply meetings held for the sole purpose of fulfilling a monthly obligation to the members.

At some of the recent meetings I have attended I found something that distressed me. There is a widening of the gap between the "hook and bullet" crowd and the "tree huggers." It would seem that the two would go hand-in-hand, those concerned with the environment and those who use it at every available opportunity. But it seems the two seldom go together to the waters of better fishing for all of us. The "hook and bullet" crowd seems interested in only one element of the sport—they want to know where, how and when to fish for a particular gamefish, or in the case of "bullet," a certain game animal to hunt. The true "tree huggers," on the other hand, are concerned only with the environment. Many never hunt or fish, nor do they care to. For the most part they are considered non-consumptive users of the resource.

It becomes immediately apparent at many of these meetings that the "hook and bullet" crowd views the "tree hugger" as someone who may threaten their sport. Some have even accused such groups of being anti-hunting or anti-fishing. A spokesman for a strong environmental group defended his organization by stating that the director and himself, as well as a large majority of the membership, did indeed both hunt and fish. My question to all of this is, who cares? And more importantly, why? I suspect that the growth of the anti-hunting and anti-fishing movement is making those who use the resources of this Commonwealth continually suspicious of those who do not participate in the sport.

But the differences between the two groups run even deeper. Look closely at the magazine rack at your local newsstand. There are actually two distinct types of outdoor magazines found there—one dealing with "how to" and "where-to" and another that addresses environmental issues only. As an outdoor writer trying to illustrate to the public that these issues are connected, I find this extremely discouraging, simply because I must slant articles to one market or the other. Very few "hook and bullet" magazines accept environmental pieces, and to be fair, few environmental magazines, usually with a smaller circulation than the first, accept articles that are not completely environmental. This creates a lot of frustration for me, because I continue to contend that the two are related. The result is that both magazines preach to the choir and those on the masthead seem content as long as circulation numbers are high enough to show a profit.

Some magazines are coming around, giving the reader both a dose of environmental topics to mull over and enough entertaining articles to keep interest. To be fair, the environmental magazines are as guilty as the "hook and bullet" ones; many read like a medical journal, and although they do address every environmental issue conceivable, they fail to entertain. In fact, they may go overboard on the doom-and-gloom aspects of the earth's inhabitants' shortcomings. Maybe, just maybe, the environmentalist groups have sounded the alarm on too many issues that still remain questionable. Many agree that while the alarm is worth sounding and all should be informed, there is an issue to be dealt with. It is not a three-alarm fire that calls for a parade of fire engines racing to the scene, but rather there is a need for a watchdog approach.

Not an easy issue to address because I am both an environmentalist and a resource user—my opinions are those of concern. A concern that the two groups are not communicating well, and that the gap can and will widen if the trend continues. I am a strong supporter of the "Resource First" concept and firmly believe that the better condition the resource is in the better my fishing and boating will be. I also believe that if the resource is in jeopardy because of recreational or profit-making use, then the health of the resource must be considered above all others. The bottom line is that they do go hand-in-hand and we should not be fighting among ourselves—we should be communicating.

Whether we like it or not, most folks want to know "what's in it for me." If I help on an environmental issue, what will I receive in return? Some will accept better waters to boat, kayak or canoe. Others will want better fishing or hunting, and there are those who are simply content to stroll through the woods and enjoy nature.

Protecting the environment is beneficial to everyone and it really doesn't matter if they hunt or fish, as long as their concern for the environment is genuine. I think that the media would be even more influential if it educated folks to the need for a clean environment and included all benefactors, from those who hunt or fish to those who do nothing more than drink tap water.

Some may be offended by fishermen and hunters, but they will have to accept the fact that both sports are extremely popular and always will be. Those who hunt and fish should not be offended by those who do not—unless they try to take our privileges away. No, I am not sounding a three-alarm fire, but because of a disturbing trend I see lying in our paths, I'm asking the watchdog to check the door.

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Straight Talk

Wetlands Protection: Pennsylvania Standing Tall

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

On September 13, 1991, the Association of State Wetland Managers met in Chicago to discuss the proposed August 14, 1991, "Federal Manual for Identifying and Delineating Jurisdictional Wetlands." At the conclusion of this gathering the group adopted the following resolution directed to the U. S. Congress, President George Bush, the U. S. Army Corps of Engineers, and other agencies. The resolution asked the following:

"Therefore, let it be resolved with regard to the proposed August 14, 1991, Federal Wetland Delineation Manual:

1. That the 60-day review period be extended to one year to allow development of a manual that is scientifically sound and is easier to use and understand.
2. That federal agencies adopt and use the 1987 Corp manual (as the Corps and EPA have already done) in the interim period pursuant to the Johnston Amendment;
3. That an independent scientific panel, such as the National Academy of Science, conduct a study of the 1991 and earlier versions of the manuals and make recommendations to Congress and to the Administration with regard to scientific validity, practicality, and understandability;
4. That the panel consider the functions and values of lands related not only to absolute wetness but their relative wetness and their location in this study; and the possibility of regionalizing the manual to reflect rain (all soils and other factors); and
5. That Congress take no further action in defining or redefining wetlands until this study is completed."

Three days later, Governor Robert P. Casey testified before the U. S. House Subcommittee on Energy and the Environment and vigorously opposed the new federal wetlands delineation guidelines. Governor Casey's testimony included the following statements:

"The President's compromise of his wetlands policy poses a serious threat to hundreds of thousands of acres of valuable—and vulnerable—Pennsylvania heartland.

In response to this threat, I have directed that Pennsylvania not accept the revised federal wetlands guidelines. They unnecessarily and dangerously weaken the safeguards we've fought hard for, safeguards that finally protect some of our most essential ecological habitats from special interests.

For 200 years, the sanctioned destruction of wetlands for development was part and parcel of this country's public policy. It is only in the past 20 years that we have come to realize that we were also destroying a vital part of our ecology.

And it is only through two decades of unified federal, state and local action that some 500,000 acres of every kind of wetland are now protected in Pennsylvania. We intend to keep it that way.

It is important to realize that there is more at stake here than simply swamps, marshes and bogs. Vast expanses of seasonal wetlands are at high risk, along rivers and streams, deep in our forests, in high mountain hollows and along major river valley plains. Wetlands that purify our underground water supplies offer protection from erosion and serve as welcome buffers between man and nature.

Removing the safeguards, as the Administration proposes, would endanger waterfowl, wildlife and an entire ecological world of vegetation.

The 1989 manual spells out, once and for all, exactly what constitutes a wetland in scientifically accepted terms that have the best interests of the environment at heart. That is why we will continue to use the 1989 guidelines as our own. They work just fine, and we don't need to fix them.

In fact, if there are any changes to be made, it should be to strengthen, not weaken, our ability to protect the thousands of acres of Pennsylvania wetlands that the Bush Administration is willing to abandon.

Don't mistake me: We are sensitive to the impact wetlands protection policies have on economic development and farming. Agriculture is our number one industry, and our number one priority is to help our farm families, not hurt them.

That is why our action plan is aimed at managing the impact of wetlands protection so development, agriculture and our wetlands can flourish side by side.

Congress has the power to protect our people and our environment from the special interests. Congress has the power to nip this misguided plan in the bud.

Today I urge the Congress and the Bush Administration to right this serious environmental wrong, to take the necessary actions to guarantee the security and integrity of these irreplaceable ecosystems."

The Pennsylvania Fish Commission applauds Governor Casey's decision to "stand tall" against this administrative attempt to weaken protection of remaining wetlands. It supports the Commission's strong commitment to protect these valuable resources.

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The covers

This issue's front cover, photographed by Barry and Cathy Beck, shows Cathy Beck about to release a brown trout she caught in the Wayne County portion of the Delaware River. If you're a trout angler and you'd like to add "something special" to a fly, check out page 12. If you plan to fish this winter, see page 22, and for the lowdown on a great western Pennsylvania fishing spot, see page 16. Interested in striped bass? The article beginning on page 24 reveals some eye-opening information on stripers and on an up-and-coming southeast Pennsylvania waterway. Are you a boater? This issue's back cover has important and useful news for you.

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FISHERIES MANAGEMENT

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THEN AND *NOW*

BY BILL PORTER

Fisheries Management or fisheries management? Both. With the capital letters, it is a division of the Fish Commission Bureau of Fisheries. With the lower case letters, it is actually working with fish, related species, environmental concerns, technical advances and the fishing public. During the last three or four decades, the distinction has been maintained.

Today's Division of Fisheries Management includes Richard A. Snyder as chief with a field and central office staff to cover the work of the division. "We have eight area fisheries managers, their support staffs, a group of specialized technical people, coldwater and warmwater coordinators, clerical staff and others within our division," says Snyder.

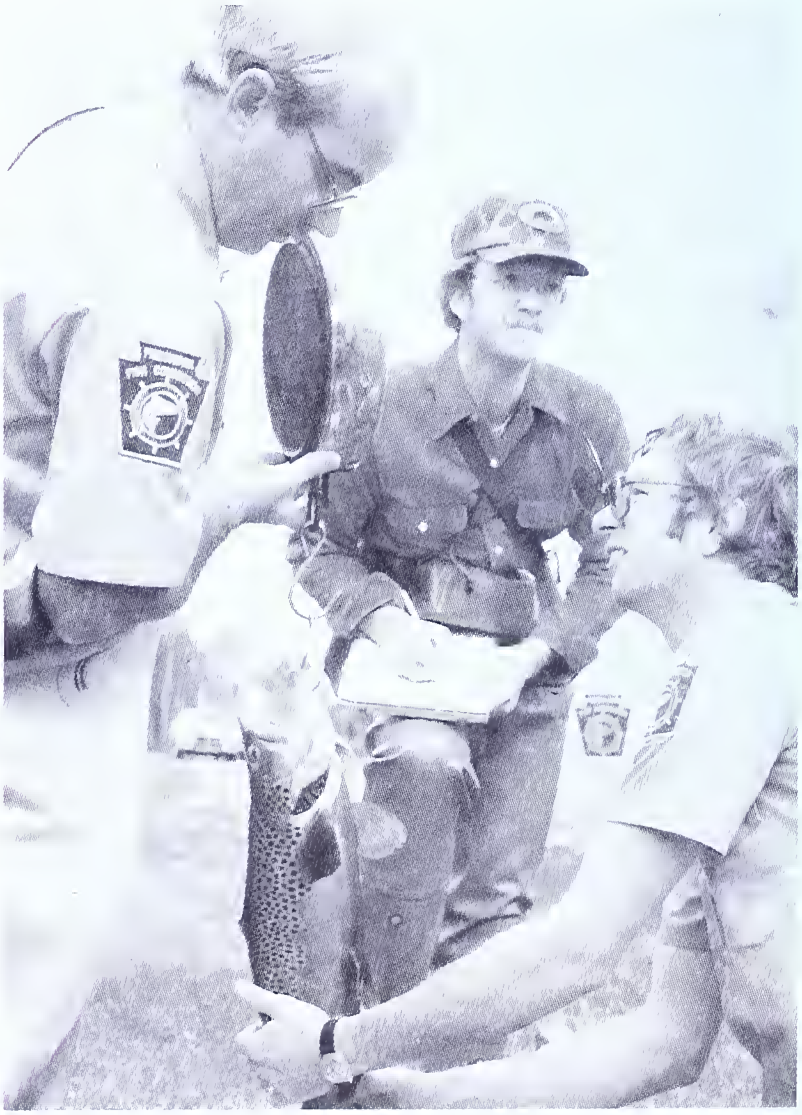
This wasn't always the case. As far back as the 1950s, there was a shotgun approach to fisheries management. Some good work was done by Commission aquatic biologists and others. Bill Voigt, former executive director, says "Keen Buss—one of our biologists at the time—did invent the hatching jar technique for raising trout. This was an innovative technical advancement, useful to trout management."

In a *Pennsylvania Angler* issue from the 1950s, Gordon L. Trembley, chief aquatic biologist in 1950, said, "The Fish Management Program of the Pennsylvania Fish Commission has now been under way for about two years (circa 1949). Although the word *management* is commonly used by all of us, the term *fish management* is newer and may need some explanation. The fish in our waters represent a crop and can be managed along the lines of agricultural practices."

At the time, the effort was concentrated on the state's lakes, those bodies of water more suitable to positive results than streams. Trembley hoped to extend the program to include the larger warmwater streams in the unit's study.

The Benner Spring Research Center was fast becoming a reality in 1951. The development of this station, under the direction of Charles A. French, the Commission's executive director at the time, would add much to the advancement of research and fish management.

Individual lakes received special treatment, leading to management policies for fisheries management through analysis of the lake and experimentation. As early as 1949, surveys showed that Conneaut



Division of Fisheries Management

Weighing a brown trout are Commission Division of Fisheries Management Chief Dick Snyder (left), Area Fisheries Manager Larry Jackson (right) and Commission biologist Dave Mayers (center). The work was part of a trout population estimate in the special regulation area of Big Spring Creek, Cumberland County.

A survey crew (left) in the late 1940s or early 1950s works on a stream. This old way of electrofishing included bamboo poles from carpet rolls and other jury-rigged equipment. The photo of an angler using a telephone on the stream (below center) illustrates the current 1991 Commission angler survey. The effort continues to garner details on angler opinions, preferences and participation. Some 2,000 licensed anglers will be contacted.

Lake held eight species of gamefish. There was also an overabundance of longnose gar and excessive numbers of carp. Over a period of several years, Commission staff worked to reduce the gar and carp and improve conditions of the more desirable species.

A series of *Angler* articles in 1951 and 1952 by Richard F. Williamson continued the emphasis on lakes and their management. A reference to the stocking of lakes with species other than those found naturally showed that not all fisheries management programs were accepted blindly. In 1951, Williamson said, "Whether this has been an improvement over nature's own balance of existence is a debatable subject and one in which the fish management program of the Pennsylvania Fish Commission is very much interested at this time."

OPINIONS ?
PREFERENCE?
PARTICIPATION?

To complicate fisheries management, there is the problem of dealing with angler opinions and breaking traditions. For example, in the late 1950s, license sales fell alarmingly to the point of attracting legislative interest. Representative William B. Curwood, House Committee on Fisheries, and Representative Harris G. Breth, chairman, House Committee on Game and Conservation, held public hearings to determine the causes of the decline.

Legislators believed one of the key reasons for the decline was the increase in the license cost (90 cents) during a mild recession. However, trout stockings had dropped from 2.8 million to 2 million and there was the intimation that in the future the Commission would curtail trout stocking and concentrate on stream management for natural reproduction.

Curwood's reaction was to support the generous stocking of all natural trout waters as sound fisheries management. Fisheries management, as such, had more problems than those of ecological nature.

By 1954, Benner Spring Research Station was nearing completion. Its potential to many sections of the Commission involved in fisheries management could best be described as "awesome," to borrow a word from today's youngsters.

The Heller Report from an Ohio-based management consultant firm was released in 1954. The total Commission was analyzed. Fisheries management received the following recommendations: "While lake and stream management is not new to Pennsylvania, work in the past was largely limited to aquatic studies and recommending types of fish to be stocked. The proposed organization would enlarge the management of fishing waters, not just making recommendations. Thus, responsibility now divided by four groups—the fishery biologists, chief fish culturist, chief of land acquisition, and wardens—would be centered in one fisheries management staff under the direct line supervision of the executive director."

Under the proposed system, plans for fishing water improvement would be prepared by the regional fisheries managers (biologists), authorized by the Commission at that time.

In a mid-1957 report, William Voigt, executive director, noted that considerable advancement had been made in the Fish Management and Research Division.

"Stocking public waters was transferred to this division and a simpler and improved stocking file system was put in place. Plantings of warmwater fish species were made only where biological studies disclosed the need. Fish management research was advanced through bio-assay studies and related activities. And Benner Spring was completed and to a large measure equipped," reported Voigt.

Modern era

The modern era of fisheries management was rapidly approaching.

A fish warden (above) checks anglers' creels in the late 1940s or early 1950s. Area Fisheries Manager Larry Jackson (right) captured this 43.75-pound striped bass during a survey of Raystown Lake in 1987.

Bob Hesser became the first chief of the Fisheries Management Section at Benner Spring in 1971. "We had accumulated a lot of data over the years and one of our tasks was to organize it, analyze it and make it useful in our work," Hesser says. "The old 'eyeball approach' to stocking and the needs of a given body of water were replaced by stream and lake surveys and the setting up of regional offices with an area-manager approach. In 1976, we did a trout management study based on watersheds and drainage basins that gave us a good base for future trout programs. The Management Section became the Bureau of Fisheries Management."

Hesser held the post until 1980 before moving on to other duties in the Commission. The bureau became the Division of Fisheries Management.

Richard A. Snyder is the current chief of the Fisheries Management Division in the Bureau of Fisheries with Delano R. Graff as director.

Changes

"There were three areas of change noticed in the last few years—changes in management philosophy, changes in our sampling techniques and changes in the application and acquisition of sophisticated equipment," Snyder says.

"We no longer manage all lakes for all species. Now we're more selective, trying to get the most out of what's available. We also have a better awareness of the resource and that particularly includes our eight area fisheries managers," Snyder says.

"The old summer sampling pattern has been upgraded to a spring-summer-fall program, which is more effective for a given body of water that goes through seasonal changes—we are now sampling certain lakes three times a year.

"Our equipment has changed considerably," continued Snyder. "It is much more sophisticated and not only can we perform more tests with greater ease, but with more accuracy than before." Snyder mentions the old electro-shocking gear that sometimes required a shot of salt into the water above the shocking area to create an electric field a short distance downstream. "That procedure could now be classified as antiquated," he says.

"Our user groups—the anglers—are now more special-interest groups. They are better informed, have high-tech fishing gear, and are more aware of ecological concerns and how their fishing might be affected. All of this is good, but more pressure is placed on the resource and the management of it," says Snyder.

Finally, he comments on the Commission's philosophic changes. "The Commission has found a place for renewable resources wherever possible. This concept has come into its own especially where trout are concerned, as well as other species. Where Mother Nature provides, it is not necessary to stock in excess if at all," he says.

The Division of Fisheries Management is working hard to be on top of what users want versus the needs and capability to satisfy those desires without harming the resource. To this point, one of the efforts (at this writing) will be a telephone survey of 1,600 trout anglers. Useful data should result and communication lines will open with the public more than ever, a change from the 1960s.

AREA 7 CLOSEUP

"As fishery managers, we try to manage fish populations over two major waterway classifications—confined and open. Lakes offer closed areas with confined fish populations. Monitoring is more effective and functional with the lakes managed with the angler in mind," says Larry Jackson, Area 7 fisheries manager.

"Essentially, my area covers most of the southcentral counties with boundaries more related to drainage areas than political lines. Our lakes vary in size, temperature and water quality as well as productivity, which dictates what can be done. Opportunities vary," Jackson says.

"A fisheries manager can look at existing fishing regulations and make suggestions if increased fishing pressure appears to be 'nailing' a year class of bass, for instance. And related to that, there is a super year class of bass in the Susquehanna and Juniata rivers this year—one of the best ever," Jackson says.

In reference to the Big Bass regulations coming up, Jackson believes "another three inches of bass would be protected where the program would apply."

"However," says Jackson, "there's nothing that is really simple and we'll have to monitor such areas carefully to make sure there is an adequate food base to support a big-bass population in large numbers."

In open systems—streams and rivers—the manager believes there rarely would be stunted fish. As a result, higher size limits could be put on fish to be protected. He also thinks that size limits for all gamefish are possibly better management tools than creel limits.

"We have some of the best trout fishing in the state in Region 7, and of course, a lot of our field work is directed to managing the trout fisheries," Jackson says.—*BP*

3-C-U

TROUT ASSOCIATION

by Dave Rothrock

photos by the author

For several years it was common knowledge among a small group of anglers that Lake Erie had a run of rainbow trout that returned to various tributary streams to spawn. While the numbers of these returning rainbows, known as steelhead, were not great, they were enough to stir much interest among those who fished for them—so much so that these anglers wondered if it were possible to increase the number of these lake-run rainbows, and how they might achieve this goal.

In 1966, Norm Ely, a waterways patrolman, proposed an idea of raising trout to several avid anglers. These anglers, in turn, suggested this idea to their organizations. With the help of the Fish Commission, they established a new cooperative nursery.

The 3-C-U Trout Association derived its name from the first letter of the second word of the names of the original supporting organizations—Gem City Outdoorsmen, Erie County Sportsmen, Wesleyville Conservation, and Trout Unlimited, Northwest Chapter. Later, two additional organizations, Erie Downriggers and S.O.N.S. (Save Our Native Species) of Lake Erie added their support.

Beginnings

Initially, 3-C-U obtained 800 steelhead fry from Thomas Run, a Lake Erie tributary. These fry were placed in wooden raceways and a spring-fed pond in Fairview Township where they were raised for one year. At the end of that year, club members released 600 steelhead trout into Lake Erie and 200 were kept for brood stock.

From this seemingly meager start, the 3-C-U Trout Association has come a long way. With the cooperative efforts of its members and other outside support, 3-C-U has contributed an average of 45,000 fish per year through 1988. In 1988, the association greatly increased its trout and salmon production to the point where production totaled 300,000 fish in 1991.

To accommodate such a large number of fish, 3-C-U maintains two holding ponds and a combined total of 2,200 feet of raceways located at eight different sites. The most recent expansion to the nursery facilities, known as the Norm Ely addition, occurred in the summer of 1990. The expansion included a 265-foot-by-55-inch raceway and construction of a new intake system to provide water to the raceways.

Bob Hetz is treasurer and nursery manager for 3-C-U Trout Association. Hetz says that the cost of trout food and nursery maintenance runs about $8,000 a year. Additionally, the 1990 expansion cost the association $8,500. Except for the yearly expenditure for trout food, 3-C-U has no formal budget. Funding is primarily from member club donations and donations from outside

These photographs show steelhead trout making their way up Trout Run, a designated nursery water where fishing is prohibited. All the steelhead eggs that 3-C-U receives come from our own Lake Erie fish. 3-C-U raised some 300,000 trout and salmon in 1991.

sources, including individuals who receive a 3-C-U Trout Association Booster button.

For the first few years, the association obtained eggs from wild rainbows returning to Lake Erie tributaries to spawn. As brood stock in the nursery increased, eggs were stripped and fertilized from these fish. Several years ago this practice had to be abandoned because of a change in the Fish Commission's policy. Now, the association receives all its eggs from the Commission.

Commission involvement

According to Cecil Houser, Chief of the Commission's Cooperative Nursery Unit, located in Bellefonte, the salmon eggs are primarily from New York, and the steelhead eggs come from our own Lake Erie steelhead. The Commission picks up the eggs and delivers them to 3-C-U in October. They are about 30 days old when they are delivered. The number of steelhead eggs has remained the same, but the number of Chinook salmon eggs dramatically increased last year with 258,000 delivered. In addition, 28,000 brown trout eggs from the Huntsdale Fish Culture Station were delivered to the association.

Houser says that when 3-C-U receives the eggs, they are taken into the hatchery building and placed into hatching jars where they remain until they hatch. The eggs require a constant flow of water, and they must be treated against fungus. When the eggs are about 45 days old, they begin to hatch. Hatching success of wild trout in their natural environment is about two to five percent, and 3-C-U realizes a hatch success rate of 65 to 85 percent.

The newly hatched sac fry are placed in incubation trays. As egg shells accumulate, the trays must be kept clean so the sac fry don't smother. The trays must also be moved about to spread out the sac fry, because they tend to cluster. While in the incubation trays, the fry feed from only their yolk sacs. When the sac has been absorbed, the fry are removed and placed into troughs. They then begin to swim freely.

When the fry have grown one to one-and-a-half inches in length, they are moved out of the hatchery building and placed in raceways at various sites. When they have grown to about two inches, they are periodically graded for size differentiation and feeding purposes. To grade them, a 3-C-U volunteer uses a wooden box with openings on the bottom. The fish, which are too large to pass through the openings, are moved to another raceway. This process greatly reduces overcrowding, which can result in reduced growth rates, fin rub and possibly death.

Houser says that 3-C-U's trout and salmon, from the time they begin to feed until they reach fingerling size, are fed both ground venison and trout food. With this alternated diet, the fish seem to do quite well. As the trout and salmon grow, the size of the food pellets also increases.

Based on 3-C-U Trout Association's annual report, the average cost of raising the trout and salmon is 29 cents per fish or 47 cents per pound. The average cost is much lower than that of the Commission because the association's members provide volunteer labor.

Hetz stated that trout food is purchased from sources in Bloomsburg and Gettysburg, and as far away as Canada. Purchases are made by the truckload and total over 11 tons a year.

Chinook salmon (middle below) start out small, but they grow quickly in Lake Erie. They do get big (below) and their weight can eventually exceed 25 pounds. The youngest trout are fed the smallest pellets (below left). As they grow, they are fed larger pellets.

3-C-U president Jim Simonelli and nursery manager Bob Hetz (below) inspect the salmon fry inside the hatchery building.

Precautions

From the time the trout and salmon are placed in the nursery raceways, they are checked carefully for any sign of disease, from parasites to bacterial infections to gill disease. When club members discover a problem, immediate treatment is necessary. When the club calls the Cooperative Nursery Unit of the Commission, Unit Chief Houser or another member of the unit responds by going to the site, usually by the next day.

However, there are times when all three of the Nursery Unit personnel are engaged. With the Commission's Fairview Fish Culture Station located near 3-C-U's facilities, Gene Hilty, assistant manager, is a pathology designate, and he can assist the association when necessary. The Commission can provide both technical assistance and, at times, medications necessary to treat the problems as they are diagnosed. The Commission's Cooperative Nursery Unit also inspects the nursery facilities at least two to three times a year to ensure that everything runs smoothly.

Contributions

Hetz believes that 3-C-U Trout Association contributes significantly to the Cooperative Nursery Program. Hetz says that the association is the largest of the state's 155 cooperative nurseries and the only one to raise salmon. Furthermore, through the innovative efforts of another association volunteer, Ziggy Kendra, the "ziggy stick" was developed. To increase aeration of water to the raceways, Kendra placed a thin stick over the splash plank between two raceway sections. The result was a very simple way to increase aeration effectively, and at little or no expense. The "ziggy stick" is now used by other cooperative nurseries, as well.

The Chinook salmon grow much faster than any of the trout species 3-C-U raises. When they reach a length of about seven inches, Hetz makes several trips to designated Lake Erie tributaries and carefully releases these immature fish to begin a new life in the depths of the lake. This year the total number of salmon released was 150,000. These fish grow quite well and provide a great sport for those anglers who pursue them. Hooking, playing, landing and releasing a fish that may tip the scales at 25 pounds can be a real treat.

A slightly smaller number of steelhead trout, about 120,000, were released into the

Barry and Cathy Beck

Pennsylvania anglers have the chance to catch exceptionally large trout and salmon like this one. For 25 years, 3-C-U has provided a significant contribution to Lake Erie's trout and salmonid fishery.

lake this year. Like the salmon, steelhead are migratory fish that remain in the lake and grow to several pounds before they return to the streams to spawn.

Jim Simonelli, president of 3-C-U Trout Association, is an avid steelhead angler. He considers stream angling for steelhead a unique opportunity to net a good number of exceptionally large trout—up to 10 pounds and larger—in Pennsylvania. The best steelhead angling, according to Simonelli, is during the winter, although the opportunity to catch a steelhead exists throughout the year.

The majority of the brown trout raised by 3-C-U are released in Lake Erie. However, these fish don't possess the migratory instincts of salmon or steelhead. Some of the brown trout, along with a small number of brook trout raised by the association, are used for trout fishing derbies. Each year 3-C-U members volunteer their time to hold these derbies at Trout Lake Motel for the Soldiers' and Sailors' Home, Veterans Affairs Hospital, Harborcreek Youth Services, Erie County Crippled Children's Society, the Boy Scouts and the children of Edinboro and Girard. The association's members provide tackle, bait and assistance to those participating in the trout fishing derbies.

For 25 years, 3-C-U Trout Association has provided a significant boost to Lake Erie's salmonid fishery through participation in the Commission's Cooperative Nursery Program and the volunteer efforts of its dedicated members. Hats off to 3-C-U for a job well done!

KiDsPaGE!

by Steve Ulsh

EMERGENT WETLANDS

wet meadows and marshes with grasses, sedges and non-woody plants

SHRUB WETLANDS

swamps and bogs with non-woody plants and trees less than 20 feet tall

FORESTED WETLANDS

wooded swamps and bottomlands along rivers and streams with trees greater than 20 feet tall

PENNSYLVANIA WETLANDS

Pennsylvania wetlands are some of our most valuable and special natural resources. They play an important role in our environment. Unfortunately, they are disappearing rapidly. You might have a wetland near you. Your help is needed in saving these special places. The information below can help you identify wetlands. It also shows the important uses of wetlands and how we are destroying them.

FRESHWATER POND

open water with non-woody plants and trees along shoreline

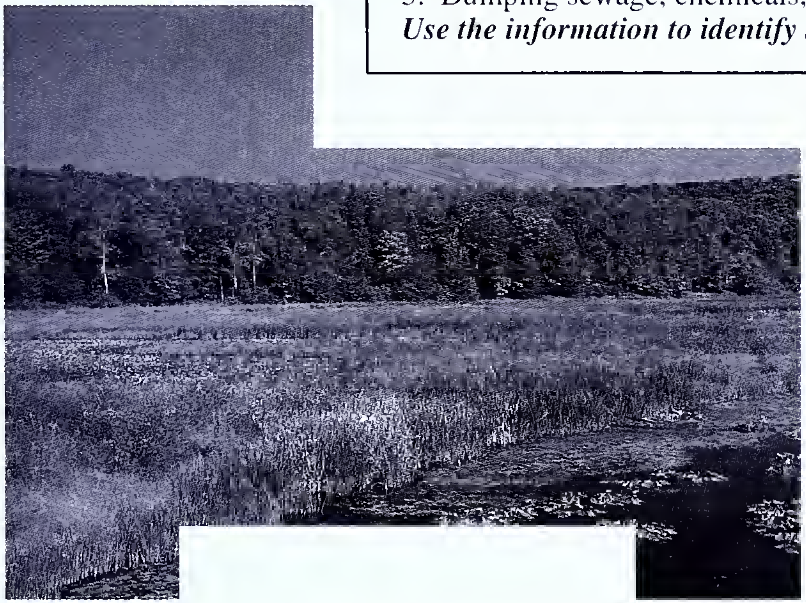
VALUES OF WETLANDS

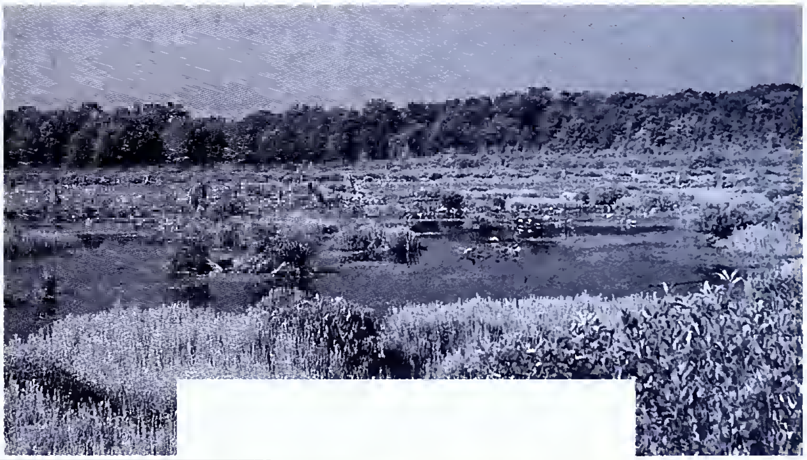
Fish and wildlife habitat
Water quality improvement
Flood danger protection
Erosion control
Natural products
Recreation
Scenery

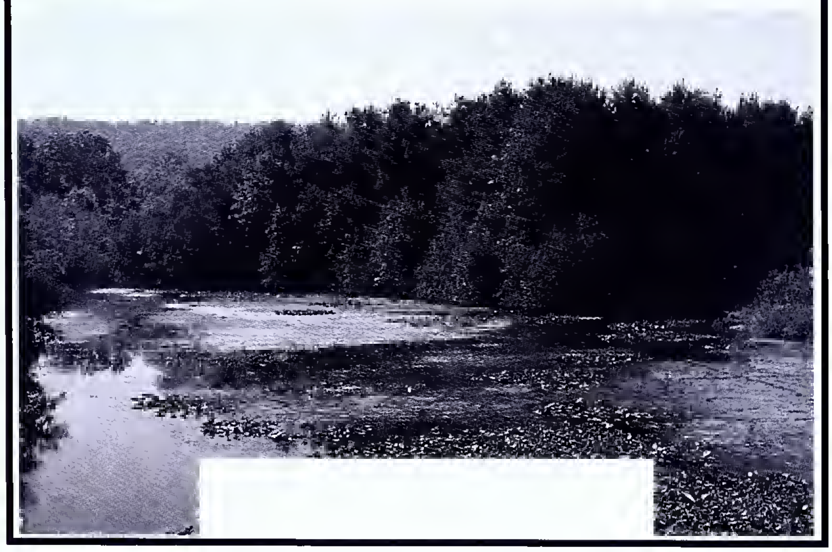
WETLAND DESTRUCTION

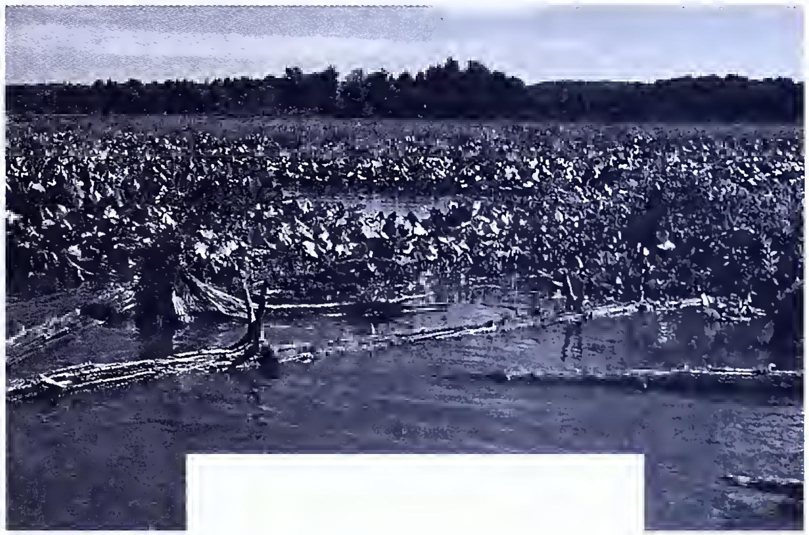
1. Drawing and clearing for crop production.
2. Digging and flooding wetlands for ponds and lakes.
3. Filling in wetlands for homes, shopping malls, highways, airports and waste disposal sites.
4. Dredging and channeling for mining, navigation and flood protection.
5. Dumping sewage, chemicals, trash, pesticides and agricultural waste.

Use the information to identify the following wetlands:

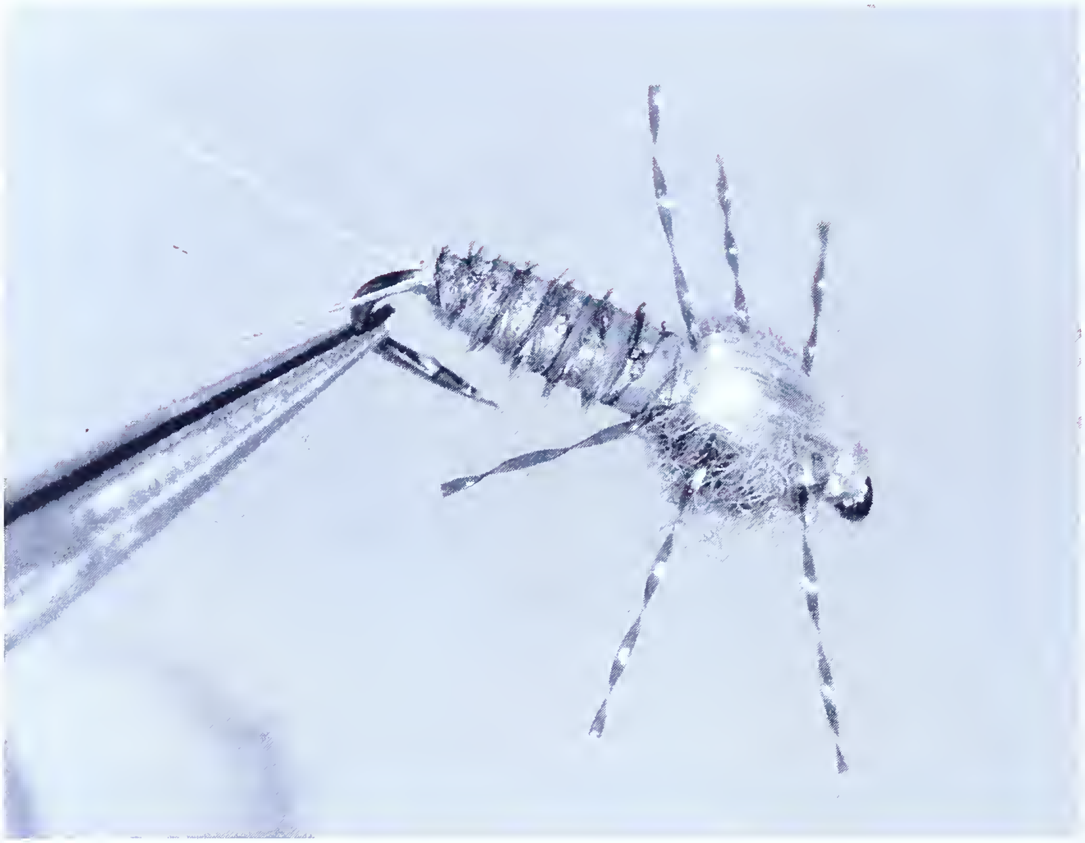








A Flashback Nymph

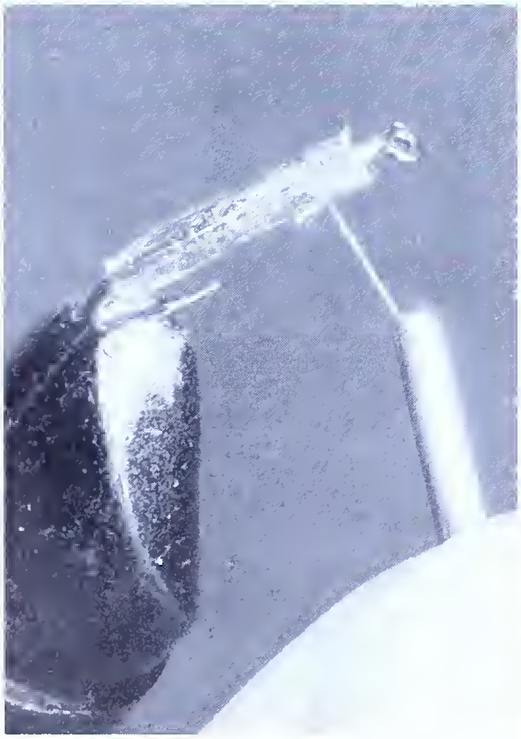


by Chauncy K. Lively
photos by the author

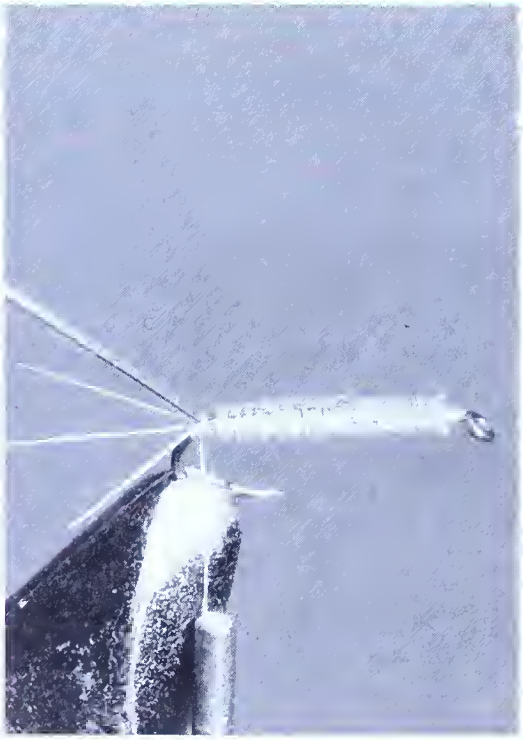
Fly fishermen have long recognized that there are times when their flies need a "little something extra" to entice reluctant fish. Many streamer flies have been designed with gold or silver tinsel bodies to provide the kind of flash exhibited by swimming minnows. The tubular mylar bodies of the Zonker flies accomplish the same thing, and indeed, numerous non-minnowlike flies—both wet and dry—have bodies ribbed with tinsel to add glitter.

Trout in healthy streams are accustomed to seeing underwater creatures that give off intermittent flashes of reflected light as they move about. In addition to silvery minnows, there are caddis pupae whose bodies show a metallic sheen when they rise to the surface to emerge. Fly tyers try to simulate this characteristic with the use of sparkle yarn as body material in their pupa patterns.

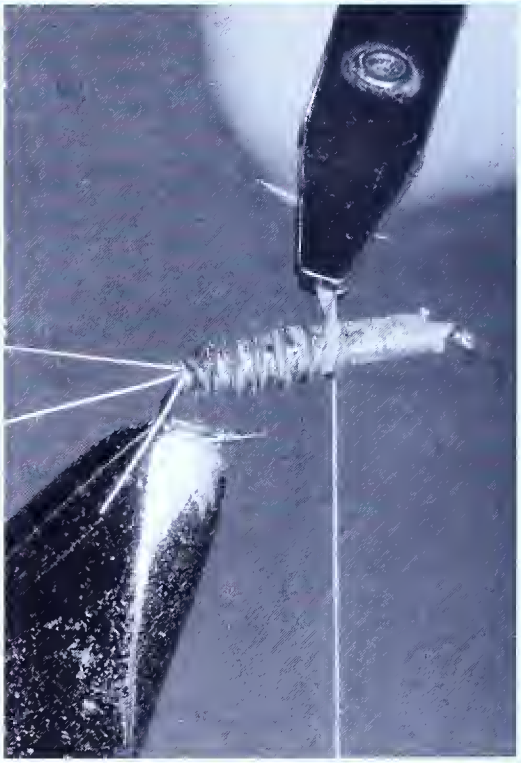
There are adult caddis flies that swim underwater to lay their eggs on rocks or bottom structure. Typically, a caddis fly is covered with short hairs that form a bubble of air around the submerged insect, protecting it from drowning—and from getting wet. Certain species of Baetis may-



1 *Make a flat underbody by cementing strips of .020-inch monofil on each side of the shank. When set, taper the rear of each strip with a razor blade. Tie in the thread behind the eye and wind it back to the bend.*



2 *For tails, tie in three stripped hackle ribs together for an effective tail length about equal to the shank length. Separate the tails and wind between them with criss-cross turns. Tie in a brown goose wing quill fiber by its tip at the base of the tails.*



3 *Coat the underbody top and bottom with Flexament. Clamp hackle pliers to the end of the quill fiber and wrap it in close turns to form the abdomen.*

flies are similarly protected and share the same underwater egg-laying traits. The air bubble enveloping these insects resembles quicksilver and surely cannot fail to draw the attention of any trout in the vicinity.

The degree of flash in any subsurface fly is one of the elements determining whether the fly attracts or repels trout. It is not a case of "if a little is good, more is better." Too much flash can actually frighten trout in clear water; that's why we don't see large streamer flies with wings composed entirely of a highly reflective material like pearlescent Flashabou. On the other hand, many fly dressers add three or four strands of Flashabou to the wing material of standard streamer patterns and find the added sparkle enhances the effectiveness of these flies.

There are times when a bit of twinkle enhances the performance of nymphs as well. The physiological structure of nymphs makes them apt subjects for the addition of subtle touches of flash in their artificials. The relatively small area of the wing case—on top of the thorax—may be dressed with Flashabou, fashioning a sort of window through which brightness shows intermittently as the nymph turns and tumbles in the current.

The nymph we are dressing this month is a flashback version of a Leptophlebia nymph. However, its size, color and form are close enough to other medium-sized mayfly nymphs to qualify it as a generic. I dress the pattern on a size 16, 2X long Tiemco hook, model 5262. The long shank provides the correct overall size, and the gape is proportionately smaller and less conspicuous. But if a wider gape doesn't bother you, the same nymph size may be attained with a size 14 regular-shank hook.

The flat body, so characteristic of many mayfly nymphs, is achieved first by cementing a strip of .020-inch monofilament to both sides of the shank. When set, taper the strips at the bend with a razor blade or file. The resultant flat platform serves as an underbody, over which the body materials are dressed.

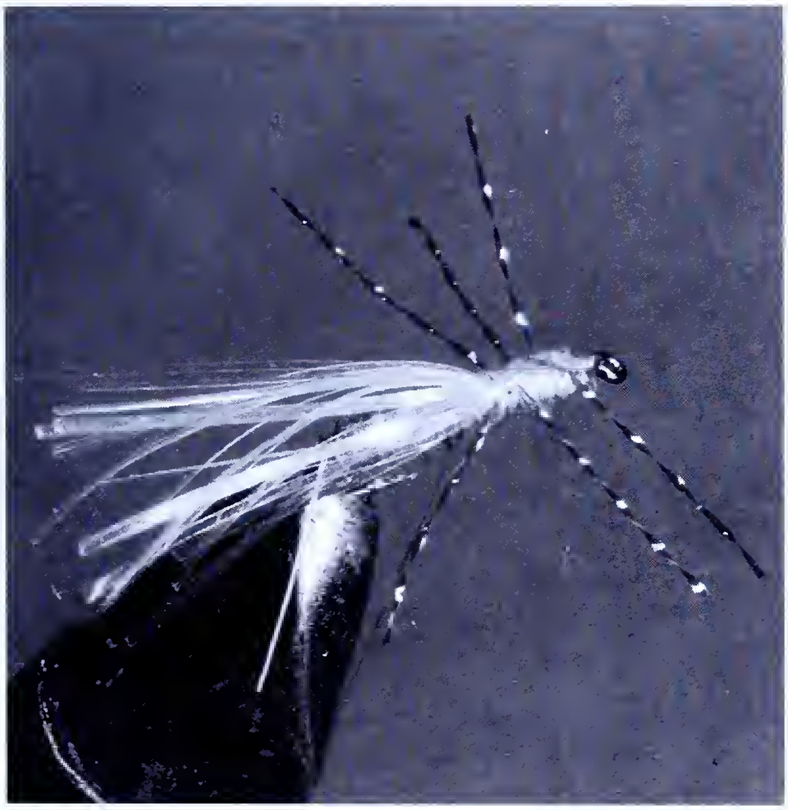
A single quill fiber from a brown-dyed goose primary wing feather represents the segmented abdomen. These fibers are flat, progressively tapered and have a wispy flue along one edge. When a single fiber is tied in by its tip at the bend and wound forward in close turns, the flue defines a progressively widening segmentation, and along the sides of the abdomen the flue represents the nymph's feathery gills.

About 10 or 12 short strands of pearlescent Flashabou form the wing case. Krystal Hair legs provide another subtle bit of sparkle. Krystal Hair is a plastic material marketed in fine, continuous strands. It comes in a variety of base colors interrupted by tiny flecks of glitter spaced in 16th-inch intervals. The material is tough and very flexible—desirable qualities in nymph legs.

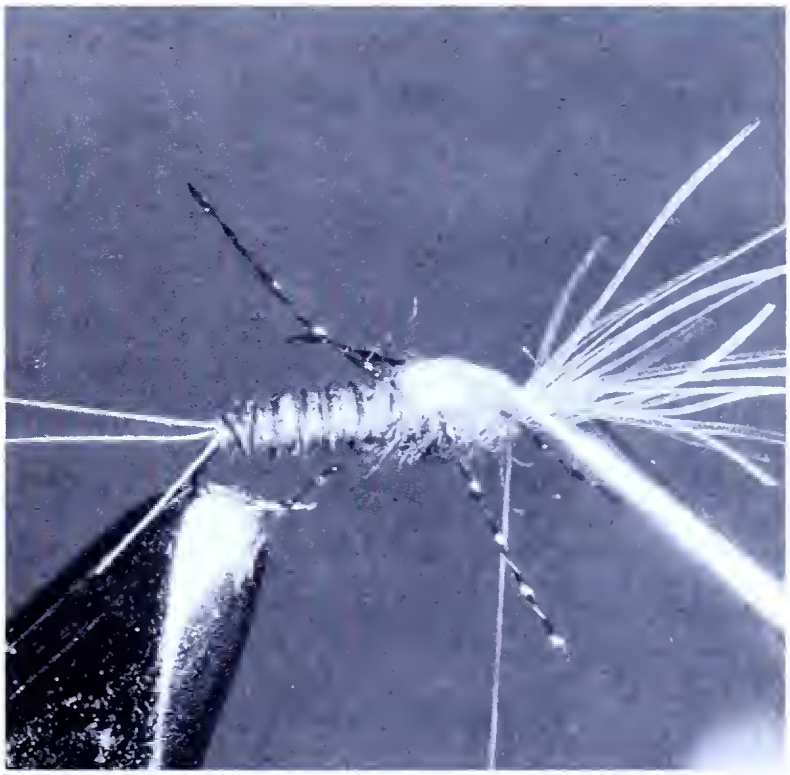
Flashback nymphs work well under ordinary conditions, but I like to reserve them for times when the water is off-color or when the trout—for whatever reason—require a bit of extra coaxing. They can make a difference on hard-fished catch-and-release waters where trout are accustomed to seeing the same fly patterns repeatedly.

Dressing: Flashback Leptophlebia Nymph

Hook: Size 16, 2X long.
Thread: 6/0 brown prewaxed.
Tails: Three stripped brown hackle ribs.
Abdomen: Quill fiber from brown-dyed goose primary.
Thorax: Dubbing of medium-brown fur or synthetic.
Legs: Three half-inch lengths of brown Krystal Hair.
Wing Case: 10 to 12 strands of pearlescent Flashabou.



4 *Cut 10 to 12 strands of Flashabou about twice the hook length and tie them in at the fore end of the abdomen with the long ends extending over the tails. For legs, tie in three half-inch lengths of Krystal Hair, equally spaced over the thorax area.*



5 *Wax the thread next to the hook, and with the finger tips apply dubbing. Wind the dubbing for the thorax and tie it off behind the eye. Pull the Flashabou over the thorax and tie it off behind the eye. Trim the excess Flashabou as shown. Finally, wind the head, whip-finish it and lacquer the finish windings.*

Passing It On

by Mike Sajna

Back in the mid-1970s, teachers Paul Hindes and Dave Thorn expressed an interest in learning how to fly fish. When George Aikens, the principal at their school and member of the Flyfisher's Club of Pittsburgh, learned of their desire, he presented each with a box of flies for Christmas and an offer to teach them how to use them.

Over the next few years Aikens passed on to Hindes and Thorn everything he had learned during a lifetime of fishing Pennsylvania waters with such people as Charlie Fox, Vince Marinaro, Lefty Kreh and his brother-in-law, *Pennsylvania Angler* contributor Chauncy Lively, in the end always urging the two teachers to "pass it on."

It was with Aikens' entreatment in mind that Hindes, when he transferred to Baldwin High School, began talking with Chuck McKinney, another teacher he met who also loved to fish, about forming a student angling club. The two thought such a club would be a good way to pass on to another generation the joy and fulfillment they had found in fishing. Little did they know at the time, a decade ago now, the profound influence the club would have on the lives of dozens of youngsters.

"Kids today need companionship," Hindes says about what he has learned as a club sponsor. "Kids today need to know that people care. Kids today need to know that some of the other activities they can be involved in are more fulfilling for their lives than hanging out at the mall."

Although the Baldwin Highlander's Fishing Club is open to all students with an interest in fishing and includes a true cross section of youngsters, Hindes, McKinney and Thorn, who is also involved with the club, are particularly proud of what it has meant to kids experiencing difficulties in their lives—kids caught up in divorce, kids from single-parent families, abused kids, kids dying for adult approval, and economically and emotionally deprived kids.

> ***Watch what happens when a club member hooks a fish. Immediately the woods fill with laughter and shouts of excitement. Members rush from everywhere to see the catch and congratulate the lucky angler. For a moment, each fish becomes a trophy and every youngster becomes a hero.***

Greatest experience

Hindes remembers one youngster who was so proud of the first fly he tied he immediately ran to show it to the social worker who was handling his case. Another boy told Hindes that being part of one of the club's weekend outings was the greatest experience of his life. And an early member, today a grown man, stopped him at a recent fishing seminar to thank him and tell him he was now "passing it on," teaching people he worked with how to fish.

Among the most touching stories involving the club, though, may be that of the boy who on an outing stole a couple of ducks for pets.

The van with the club members in it was already heading home when the chaperones heard muted noises coming from a bag in the back and then noticed it move. When they checked it out, they found ducklings hidden inside. As it turned out, the kid had simply wanted a pet. He had never owned a pet in his life and saw the ducks as his first chance to do so.

"It wasn't exactly what we wanted to happen," Hindes says, "but I don't think it was a truly malicious effort. It was a very genuine feeling he had. This was his way of making sure he had a pet to take care of in his life. And there are an awful lot of stories like that."

Attitude, self-esteem

Even though the club is not any kind of formal treatment program, the positive effect it has had on members' attitudes and self-esteem has been so dramatic that social workers at Baldwin High School have come to seek out Hindes and McKinney routinely to alert them to students experiencing problems, including drug and alcohol abuse.

"We don't sit there and preach drugs and alcohol at all," Hindes says of their approach to the subject. "Through the natural course of just meeting with kids, we've found out you can't make decisions for them. All you can do is offer them some alternatives and choices, and hopefully they will find more rewards in the positive things they can do than in the negative things."

Hindes believes formal drug and alcohol treatment programs are worth it if they help even one youngster. But for the most part he believes kids have been bombarded with slogans and warnings about the dangers of drugs and alcohol for so long, most have stopped listening and may even look on them as jokes. "'Just Say No.' Okay, that's great," he says, "but the question becomes what do you say yes to? What else are you going to provide them with? How are you going to fill their time?"

Options

The Baldwin Highlander's Fishing Club provides options in the form of fly tying, fishing videos, casting practice and outings. It also seeks to expand the horizons of its members through the appearance of guest speakers, fly fishermen from various back-

Mike Sajna

grounds who provide kids with alternative views of life while talking about fishing.

"When you tie a fly and when you go out and learn how to cast and you catch a fish because of those kinds of skills you've acquired, it's a great confidence-builder," Hindes says. "It builds self-esteem. You feel good. And I think that's what these kids find in their lives that is maybe the single most important factor in making a difference. Because you've got to be happy with who you are. You've got to feel good about yourself or you won't feel good about anything else you do. And that's what this offers them, the opportunity to gain that kind of an experience.

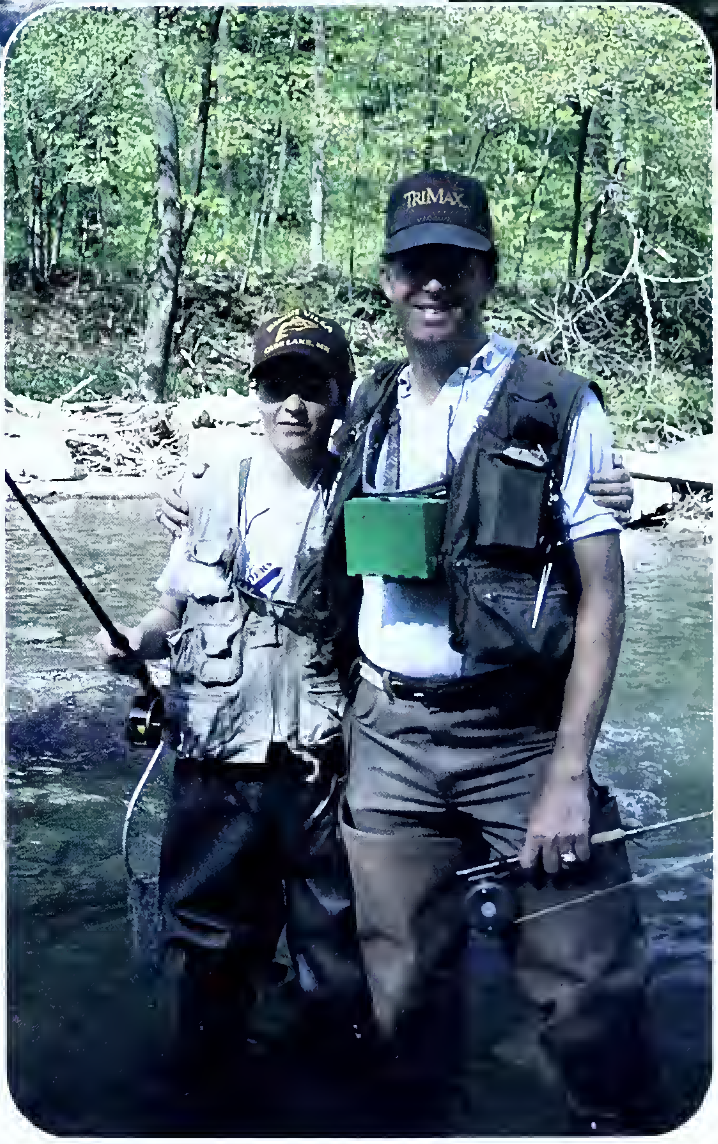
"They might not be able to gain it academically," he adds, "but it's like anything else—once you've been successful that success is transferable."

According to Hindes, the key to starting a fishing club for kids is mainly a willingness to invest some time. The Baldwin club meets 10 to 12 times during the school year and in the spring makes two or three outings to local streams and a weekend trip to a famous waterway such as Fisherman's Paradise.

Hindes and McKinney both ease the burden on their own families by making them part of the club, which they think also is a good way of providing a role model for their own kids.

Anybody who wants to see exactly what the Baldwin Club means to its members needs only go along on one of its outings. Watching the kids struggling in their too big waders and vests at first, it is impossible not to smile. But forget the comedy and notice the faces. Caught up in efforts to reach fish holding next to logs or behind rocks, they are full of serenity, a peace with the world that some of them have known all too seldom.

Then watch what happens when they hook a fish. Immediately the woods fill with laughter and shouts of excitement. Members rush from everywhere to see the catch and congratulate the lucky angler. For a moment, each fish becomes a trophy and every youngster becomes a hero.



The key to starting a fishing club for kids is mainly a willingness to invest time.

Wintertime

Muskies in the Allegheny River

by Jeff Knapp
photos by the author

It was just a small nook in a mid-river island, but it held water approaching 12 feet deep. It also offered protection from the strong wind that whipped up whitecaps on Pool 6 of the Allegheny River.

I had found a small, secluded bay in the area a few seasons ago, complete with a large beaver house and runway. I figured the place offered protection plus the chance to catch fish during this blustery mid-winter walleye fishing trip. Eager to get out of the nasty weather, I motored my partners John and Steve into the bay.

My jigging spoon, tipped with a lively fathead minnow, had barely reached the submerged tentacles of the beaver house when I felt a sharp tap. My instinctive hookset brought an instant response from the fish, which luckily headed for open water instead of burrowing into the wood cover. Within seconds a large musky was wallowing on the surface.

The battle was embellished by the fact that half the pool was still covered with ice. My rod tip spent much time underwater as I tried to keep the fish from fraying the line.

Ultimately I brought the fish to net—a rubber walleye net not intended for fish in the 40-inch range. Twice Steve attempted to bag the fish, only to have it escape. On the third attempt the spoon snagged the mesh and the 'lunge pulled free. I would have released the fish, anyway, so nothing was lost.

A freak event, hooking a good muskellunge on an ice-filled river? Not really. The fish are there, and muskies, river muskies in particular, seem active in cold water.

I'm one who fishes the Allegheny for walleye during the winter months, so many people question me about the other species of fish I catch at this time. Naturally, sauger come in second. Then I say that muskies take third honors. During the winter of 1990-91, my partners and I hooked a good dozen 'lunge.

History

Though muskellunge are native to the Allegheny River drainage, they are present today largely because of the Fish Commission stocking program. Environmental problems, such as habitat loss and marginal water quality, necessitate such stocking.

The Allegheny River flows through portions of management areas 2 and 8. Both Ron Lee and Rick Lorson, Area Fisheries Managers for these respective regions, think that a limited amount of natural reproduction occurs.

"There is probably some reproduction of muskies that serves to augment our stocking program," says Lorson, who manages the river from Lock and Dam 6 downriver to its merger with the Ohio. "The size and nature of the lower pools make it tough to evaluate this thoroughly," he adds. Muskies have been stocked in Area 8 since 1975.

From L&D 6 upriver to Port Allegany, the river is managed by Ron Lee. This section has been stocked since the mid-1960s. Some stockings of tiger muskies have been made in the past, but since 1986 only purebred muskellunge have been introduced.

Essentially, river sections (the Fish Commission breaks the river into 17 separate sections) are stocked on an alternate year basis. Density runs from one to two musky fingerlings per acre. To put that in layman's terms, Pool 5 of the Allegheny, which is 5.9 miles long, received 1,300 fingerlings in 1990.

Allegheny River musky angling in all likelihood will only get better. One of the mainstays of the forage base, gizzard shad, was exceptionally prolific during the summer of 1990, Lorson says. This should add to the health of the overall fishery.

To illustrate further the potential of the winter musky fishery, consider the fish taken in January of 1990 by Larry Lucas of Brackenridge. Caught in the Armstrong County section of the river, the 50-inch musky weighed 40 pounds, making it the

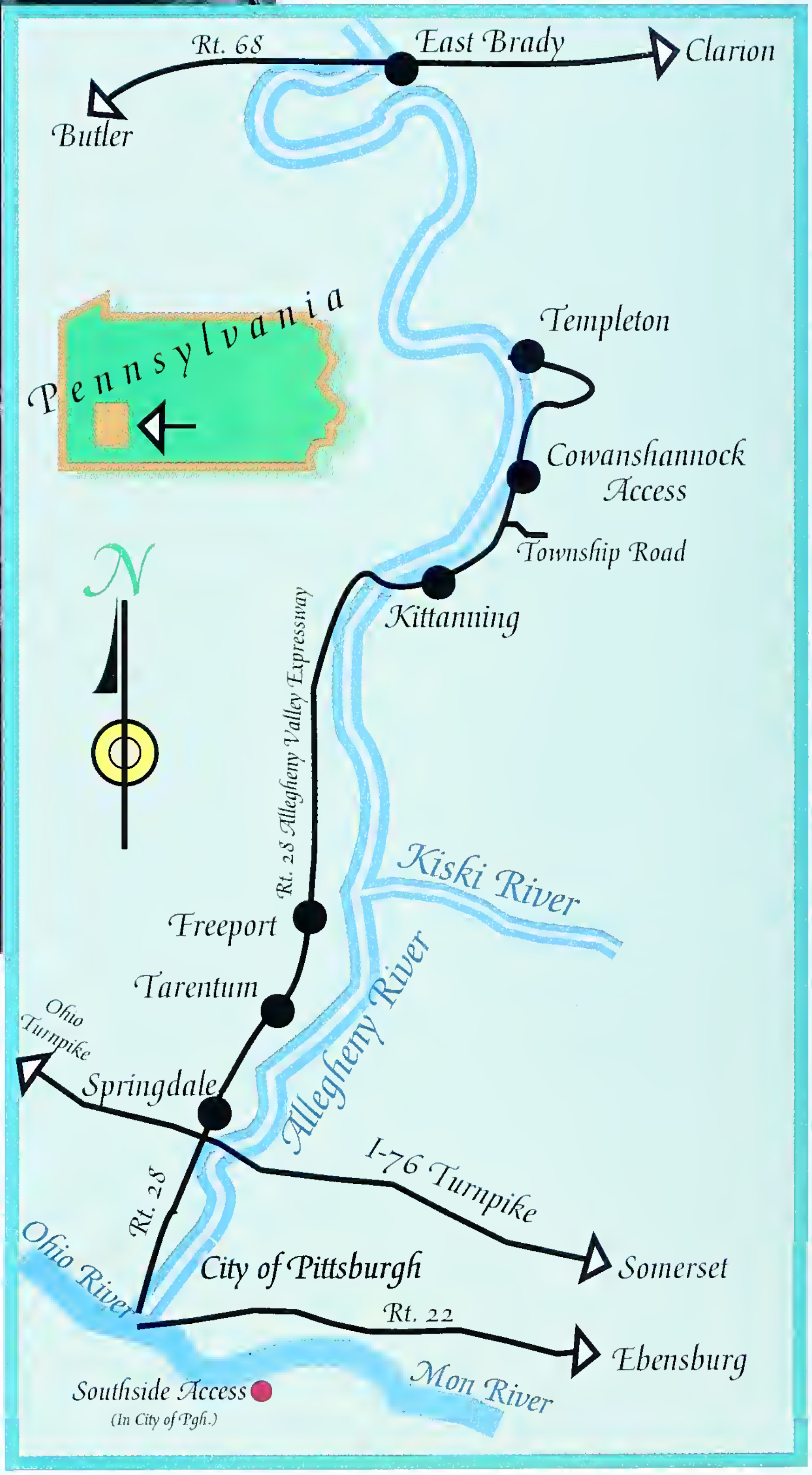
musky weighed 40 pounds, making it the second biggest 'lunge recorded by the Fish Commission for the year.

Folks, when you're talking 40-pound muskies, you're talking world-class fish!

Location

When considering winter musky fishing, you'll want to break the river down to size—it's no small trickle. Perhaps the most consistent fishing is found on the navigational pools of the river, the lower 72 miles.

This section of river, influenced by eight lock and dam systems, takes on a more lake-like look. The free-flowing portions of the river certainly have muskies, but they may



Allegheny River musky fishing in all likelihood will only get better. One of the mainstays of the forage base, gizzard shad, was exceptionally prolific during the summer of 1990. This should add to the health of the overall fishery.

major reason is high water—not flood conditions, but the lower Allegheny can fluctuate five feet, while remaining safe to fish.

High water is often the norm during the winter. Because of the lake-like environment on the lower river, high water doesn't make the river unfishable (or downright dangerous), as quickly. High water actually tends to concentrate these fish, making the task of finding them much easier.

When the water turns cold, the river's gamefish seek out areas of slack water to free themselves from the burden of fighting the current. This is certainly true of muskies.

Typically, obstructions that deflect the main flow create slack water areas. Examples include the back sides of islands, submerged humps, bars, sharp river bends and the edges of deep holes. Muskies that take up residence here also come into contact with the bulk of the food chain. Plenty of emerald shiners, shad, suckers and carp, not to mention perch, sauger and walleye, are available for the taking.

It's very important to note that the high water redefines these areas. What may be a nice little eddy during normal flow can lose its attractiveness in more extreme conditions.

Even though gamefish such as walleye and sauger tend to use the area of a slackwater pool closest to the main current edge, my experience has shown that muskies are often away from that edge, right next to the bank. Again, this is doubly true when the water is high and discolored.

Presentations

Plenty of winter river muskies are taken with jig/minnow presentations intended for walleye. Why argue with success?

Leadhead jigs, usually weighing 1/4-ounce, are perfect for presenting a large fathead minnow, shiner, chub or sucker to a musky. Jig examples include Northland's Fireball jig and Lindy's Fuzz-E-Grub. The larger minnows should incorporate some type of stinger hook. The Fireball comes pre-rigged for the stinger. Other jigs can have stingers attached by tying off two to four inches of heavy mono to the hook shank or eyelet complete with a size six or eight treble hook.

Many musky catches are incidental ones by walleye anglers, but the person targeting these fish may do well by beefing up the terminal tackle. Andy Vetula, a noted Pennsylvania musky angler, recommends fashioning shock leaders on jigs with 60-pound mono and crimp-on sleeves. Another protective option for dealing with these toothy critters is to use light multi-strand steel leader material. With a set of forceps one can permanently attach a jig on one end of the leader and a barrel swivel on the other. Leader length should be about a foot.

Both these options give protection from the musky's teeth, though in the cold water the more subdued strike often lands the hook in the corner of the mouth, with the line out of harm's way.

A final presentation option should include artificial minnow baits like the Rapala, Rebel, Redfin and Thunderstick. These baits demonstrate good action while maintaining a slow retrieve, a major consideration in cold water. Artificials are most effective during peak feeding times, such as dusk.

Hotspots

The navigational pools with the most varied habitat seem to provide the best winter musky angling, though sport is available in all of them.

Pool 6 of the river exemplifies great water. Stretching from Kittanning downriver to Kelly Station, the pool provides many features. Major tributaries include Garretts Run, Crooked Creek and Glade Run. Tributaries often form gravel bars, which create slackwater pools. These areas should always be checked for river muskies.

Major island complexes are found in the Cogleys Island, Ross Island and Nicholson Island areas. Even though Pool 6 has plenty of habitat, you can find the same conditions up and down the lower 72 miles.

Other important tributaries include Mahoning, Pine, Cowanshannock, Redbank, Buffalo, Bull, Deer and Pine creeks, along with the Kiskiminetas River. There are several other island systems, too.

A final spot that's noteworthy is the area within the first few hundred yards or so of the dam tailrace areas. Keep in mind that the tailrace area itself is very dangerous and must be avoided, but good structure, in the form of mid-river humps and bars, is often present downriver. These spots can produce when river conditions are normal to low.

To obtain a set of river charts for the Allegheny River, contact: U.S. Army Corps of Engineers, William S. Moorhead Federal Building, Pittsburgh, PA 15222. The Corps will send you a listing of the charts and prices.

The author thanks AFMs Rick Lorson and Ron Lee, and Fisheries Technician Allen Woomer, for technical assistance with this article.

Access

Pool 9. Fish Commission access across from East Brady, at the mouth of Sugar Creek.

Pool 8. Fish Commission access at the north end of Templeton.

Pool 7. Fish Commission access at the mouth of Cowanshannock Creek.

Pool 6. Kittanning Borough ramp, located just off Water Street in Kittanning.

Pool 5. No public access.

Pool 4. Freeport Borough ramp, located on the west side of town.

Pool 3. Fish Commission access, located under the Tarentum Highway Bridge.

Pool 2. Fish Commission access, located near Springdale.

Pool 1. Three Rivers Pool—the closest public access is the Fish Commission access near the Birmingham Street Bridge, in Pittsburgh on the Monongahela River.

Numerous other private ramps are available up and down the river. Their availability depends on the weather and other factors.—*JK.*

Safety in winter

Fishing from a boat in winter demands special considerations.

Dress for the elements. This means the layered approach, efficient clothing, and plenty of it. This preparation includes wearing a personal flotation device. The Ensolite material used in PFDs is also a great insulator, and I often wear the device under the outer shell as part of the clothing system. Include at least two pairs of gloves.

Boat launching can be an adventure in itself. If conditions are marginally slippery, you may need a four-wheel-drive vehicle. Beyond marginal? Don't take a chance. Take along a supply of traction material, like sand or cinders, for the snow squall that occurs while you are on the water. A shovel isn't a bad idea, either.

While on the water, remember that many warning buoys may have been removed for the season. This applies in particular to the warning devices below the dams. That the buoys are not in place doesn't suggest it's safe to fish there. In fact, just the opposite is true. Be aware of floating ice that may be present, too.

Winter river fishing is something I do when conditions permit it, and it always requires special preparation. Don't force the issue.—*JK.*

The Whistling Sardine

by William R. Biebel

The spring days mellowed and the wind lost its bite. Lakes and ponds shed their ice and warm showers tempered the waters. Suddenly I found myself suffering from a bad case of spring fever that must have been transmitted by the fishing bug. A few angling hours would be great therapy for my illness.

In the morning, before going to work, I threw my fishing gear into the car. I decided to visit a favorite spot in the mountains at the end of the day. The place was called Moosehead Lake and it held fond memories of past fishing trips.

The work day dragged on, and sometimes I thought the clock on the wall had stopped. Finally, it was quitting time. I quickly changed into old clothes, slid into the car and was on my way.

I turned the car off the macadam road and rumbled down a single lane dirt road for about two miles. Then traveling along a railroad for another half-mile I reached my destination. The terrain was rugged, but my old Chevy managed the task.

Moosehead Lake developed when the railroad was constructed through a swamp located between Mountaintop and White Haven. The curved, elevated bed of ballast made a formative dam that backed up the water to its present status. Large boulders line the water-side of the dam and provide dark, underwater pockets that support smallmouth bass.

In addition to bass, there is an abundance of catfish and a minority of fishermen. As a result, these whiskered denizens are stunted. There are few complaints, though—eight-inch catfish are perfect pan size.

Old campfire sites were strung intermittently along the shore. Their blackened stones and charred scraps of wood told of mary happy fishing hours. Deer tracks pocked the wet humus near the water's edge. And although the lake is located close to civilization, it is wild; and it looks wild. Dead ashen-gray trees and stumps dot the lake, increasing its remote appearance.

The dark sky matched the silver-gray water. Skeletal trees showed a blush of life in their branches and leaf buds were swollen. I had the lake to myself—or so I thought.

I cast out a glob of worms securely hooked and weighed down with a sinker. When the line settled to the bottom I reeled in the slack to keep the line tight. I didn't expect fast action, so I decided to get supper over with before the catfish found the bait.

I plucked a can of sardines from my shirt pocket, and bread and a fork from my trouser pockets. While eating my meal I kept a sharp eye on the rod tip for signs of nibbling fish.

> *A blurred black mass exploded into the clearing 60 feet away. A large black bear came to a stiff-legged halt when it saw me.*

It was a quiet time. I heard only the gentle lapping of the wind rippling against the shore. Suddenly, about halfway through the can of sardines, a loud, weird sound broke the lake's stillness. I couldn't remember ever hearing a sound like that before. Was it a large bird? The hair on the back of my neck just started to settle down when it rang out again. I choked down another sardine with a mouthful of bread. Why was I eating so fast? Again it came—this time sounding more like the blat of a sheep. I didn't see any farms in the immediate area.

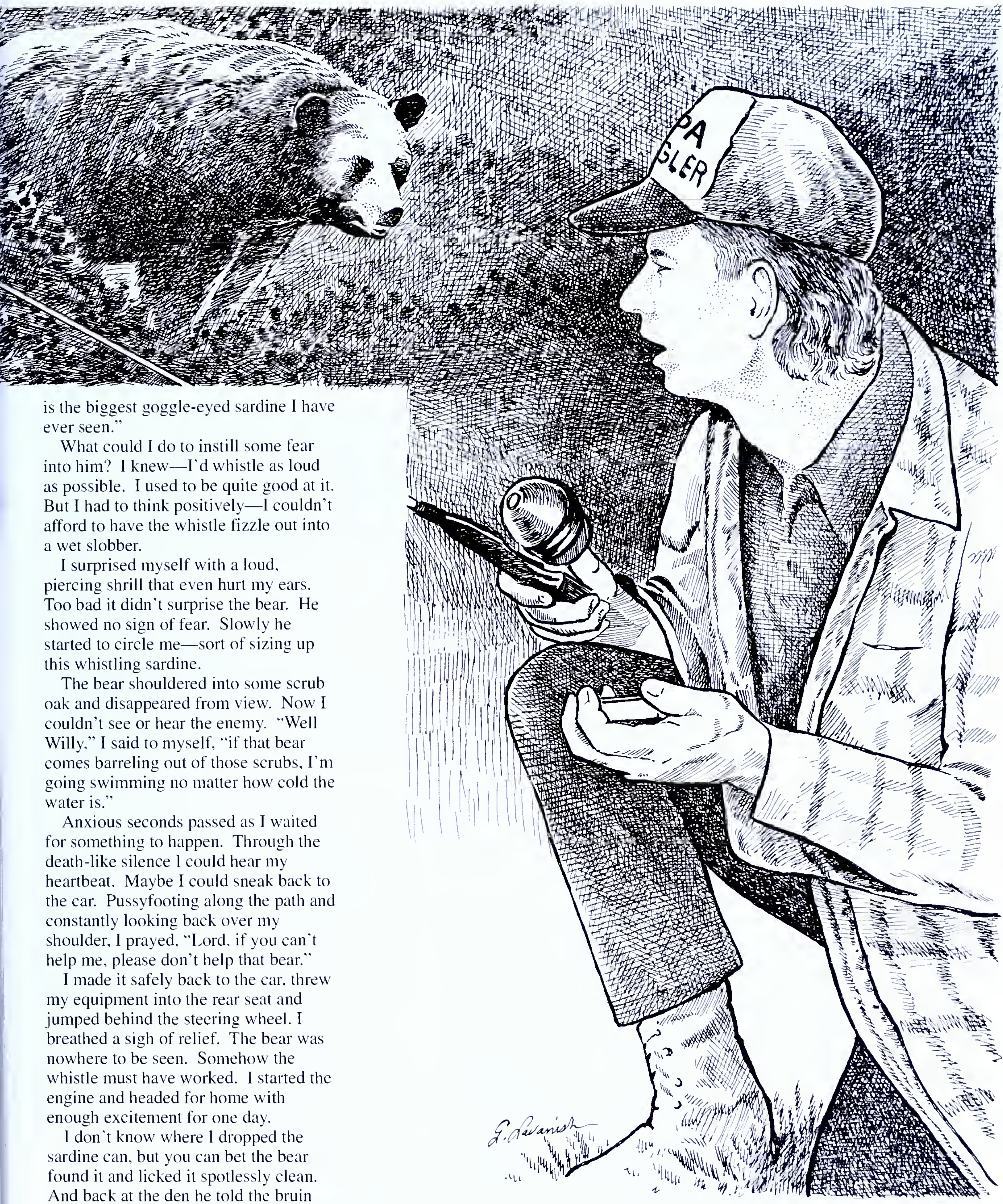
My fork struck bare metal—the sardine can was empty. I didn't recall eating the last fish. Something came charging along the lake shore path toward me. Whatever it was would break through the rustling bushes at any moment. It sounded heavy and large.

A blurred black mass exploded into the clearing 60 feet away. A large black bear came to a stiff-legged halt when it saw me.

How did the fishing pole get in my hands? Some weapon! His small, beady eyes looked confused and menacing. It's funny how oily sardines can leave a dry, cottony taste in your mouth.

A thought struck me like lightning. This bear is after sardines! This was the source of the strange sound. Every whiff of fish on the wind had tormented his nostrils and made him automatically cry out with hunger pain.

Questions raced through my mind. How long had he been out of hibernation? Is he looking for his first meal? I could also read his mind. It said, "This



is the biggest goggle-eyed sardine I have ever seen."

What could I do to instill some fear into him? I knew—I'd whistle as loud as possible. I used to be quite good at it. But I had to think positively—I couldn't afford to have the whistle fizzle out into a wet slobber.

I surprised myself with a loud, piercing shrill that even hurt my ears. Too bad it didn't surprise the bear. He showed no sign of fear. Slowly he started to circle me—sort of sizing up this whistling sardine.

The bear shouldered into some scrub oak and disappeared from view. Now I couldn't see or hear the enemy. "Well Willy," I said to myself, "if that bear comes barreling out of those scrubs, I'm going swimming no matter how cold the water is."

Anxious seconds passed as I waited for something to happen. Through the death-like silence I could hear my heartbeat. Maybe I could sneak back to the car. Pussyfooting along the path and constantly looking back over my shoulder, I prayed, "Lord, if you can't help me, please don't help that bear."

I made it safely back to the car, threw my equipment into the rear seat and jumped behind the steering wheel. I breathed a sigh of relief. The bear was nowhere to be seen. Somehow the whistle must have worked. I started the engine and headed for home with enough excitement for one day.

I don't know where I dropped the sardine can, but you can bet the bear found it and licked it spotlessly clean. And back at the den he told the bruin folk about the big whistling sardine that got away.

Big Fish in Cold Weather

by Jim Gronaw

It's 28 degrees outside and a November wind is howling. With water temperatures in the upper 40s, few anglers consider such conditions ideal, or even remotely promising for fishing. The possibility of making an exceptional catch, indeed, seems remote.

The minnow I threaded onto my hook squirmed violently, opposing its chilled predicament. Soon it would be caught up in the maze of underwater currents, confused in the turbulence of the Susquehanna River only to regain its composure within the stillness of a quiet eddy. The splitshot that the baitfish towed around hampered its efforts to escape the attack of a smallmouth bass. When this life-and-death struggle was transmitted to my rod tip, I had no way of knowing that my icy cold fingers would have to respond as if they worked normally.

For the next several minutes, the smallmouth fought in a violent, powerful manner, almost as if it were a balmy, summer effort. Two head-shaking half-leaps were probably aborted by cold, yet the fish gave a clear picture of its intentions. When the football-shaped fish finally lay motionless in the eddy at my feet, my cold fingers responded by gripping the bulging 20-inch bass. I wasn't cold anymore.

> **Despite the hardships, expert anglers know that big fish can be caught in cold water.**

Cold-weather fishing, be it open water or on the ice, is perhaps the strongest test of fishing faith. The mid-winter trout angler on a Keystone State limestone stream possesses the same heart and stamina of the tailrace walleye anglers who fight ice and snow in February. Despite the conditions and the hardships, they all know that big fish can be caught in cold weather.

Is it luck, skill or coincidence that big fish are caught during cold, miserable weather? Indeed, all three variables come into play. Since 1976, I have kept detailed records of all my fishing trips, and I am amazed at the number of big fish I have taken from November to March. These aren't just rare catches. They are consistent year after year. Biggest walleye, January; crappies, November; smallmouth, November; trout, December and January.

Of course, every species has patterns that can make them vulnerable to cold-weather angling. But there are some simple explanations that apply to all gamefish and anglers alike, that actually tip the scales in favor of the cold-weather fisherman.

Fishing pressure

With very few exceptions, fishing pressure on most species is far less in cold weather than any other time of year. I believe the lack of such pressure causes big fish to ease up and become less wary, and thus they are more vulnerable to the persistent angler. Most fishermen argue that the springtime "open seasons" are the best times for taking trophy fish, and at first glance, all those baitshop photos tend to indicate this is so. However, keep in mind that there are 10 times the number of fishermen on the water in May than there are in February. My records indicate that from November through March, I caught more big fish per angling hour than any other period throughout the year, plain and simple.

Seasonal fishermen and "fair-weather" anglers never experience this phenomena. Perhaps they have been conditioned for too long to believe that big fish do not feed when the water chills and the snow flies. Sure, metabolism and feeding habits gear down, but fish must feed during the winter to survive. Some coldwater species are more active in the winter, yet many warmwater varieties develop distinct, consistent feeding patterns once the chill has set in. And with some seasonal changes in Pennsylvania such as mild winters in recent years, many species actually tend to be relatively active in cold weather, like panfish, trout and northern pike.

Big-fish waters

It doesn't matter how persistent or knowledgeable you are—if you're not fishing in waters that yield trophy catches, then don't expect them. One of the most important components in any big-fish strategy is the homework and study of waterways that produce exceptional catches. This is especially true for cold-weather fishermen who are fighting elements that can quickly dampen the angling spirit.

A classic example is the largemouth bass fishery in Lake Arthur, Butler County. Over the past several years, this waterway has produced more citation-sized largemouths than any other lake in the state. A fair number of big fish were caught by ice fishermen in recent seasons. Obviously, a mid-winter bass fisherman would have to put this lake near the top of his "big-fish" list.

Similar patterns develop on other waterways, too. The Yellow Breeches in Adams and Cumberland counties has long been traditional, big trout water for Pennsylvania anglers who simply can't wait for spring. It's ideal cabin fever water.

Get the facts on big fish catches from baitshops and regional and local fishing contests. Develop a game plan long before you launch your boat. You might need several autumn trips to a waterway to get the feel for the situation. Above all, concentrate your efforts where big fish are present.

Jim Gronaw

Persistence

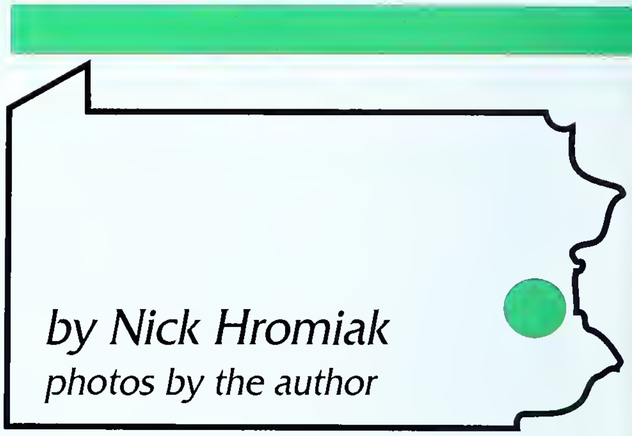
It can be difficult to concentrate on a bouncing jig when wet snow and sleet spatter your face and a sharp wind rips at your watery eyes. But fishing in the cold almost always boils down to patience and persistence. "Hanging in there" is part of the game, and it's often the pivotal factor for success.

When Ron Munshower, of Seven Valleys, PA, stayed out on Marburg Lake ice well into dusk, his battle with an oncoming snow squall was well-rewarded. He had been sporadically catching plump yellow perch on his ice rod and jigging spoon when he hooked what was obviously a big fish that far exceeded his four-pound mono. After a long, cautious battle and many anxious moments, he reached down through 10 inches of ice and gripped the eye sockets of a 30-inch, 10-pound walleye that now hangs on his den wall. Although many other persistent outings had resulted in far less, "hanging in there" let Ron catch a fish of a lifetime that January evening.

Being miserable isn't fun, but a big fish can certainly raise your spirits and warm your soul even in atrocious weather. I caught my personal best smallmouth of 5 $^1/_2$ pounds during a mid-November snow squall with the air temperature at 24 degrees. The largest northern pike I ever caught came through the ice when the thermometer read 13 degrees below zero.

Was I miserable? Not really. It's part of paying your dues—part of the game. Persistence and patience come with the territory. They're prerequisites for catching big fish in cold weather.

LAKE NOCKAMIXON'S
Remarkable Comeback



by Nick Hromiak
photos by the author

There was a time, a few years after its opening in 1974, you could catch feisty, hand-sized crappies on almost every cast in certain areas of Lake Nockamixon. Carp and catfish were plentiful and largemouth bass could be found in almost every cove. During the evening hours leg-long muskies would cruise the shorelines around the marina piers in search of a meal. Then it hit. Pollution in its worst form.

Sewage, from failing septic systems along the Lake Nockamixon tributary Tohickon Creek, entered the lake. Waste water seeped in from the nearby borough-owned Quakertown Sewage Treatment Facility. And at the same time, the lake suffered from an overabundance of agricultural runoff, compounding an already devastating situation.

But through a lot of publicity, Fish Commission intervention, DER/USDA/EPA response, and realistic cooperation from the offenders, Lake Nockamixon was essentially purged of these impurities and is coming back. In fact, within the past two years, the lake has produced some impressive catches of largemouth bass in the five- to six-pound range, walleye averaging four to six pounds, eight-pound-plus catfish and hybrid striped bass weighing over 13 pounds. From this early evidence, it appears that Nockamixon is on the verge of becoming a premier fishery in the southeast, especially for stripers.

After the clean-up began in 1982, the lake received a transfusion of new life through the efforts of a Fish Commission management program headed by Area Fisheries Manager Mike Kaufmann. Beginning in 1984, the lake was stocked with walleye and striped bass fingerlings, and to a lesser extent, other species. A large number of alewife and gizzard shad were also introduced as forage for the resident fish population.

Since then, the Fish Commission continued an aggressive but cautious stocking program. According to Kaufmann, 26,850 small walleye fingerlings, 7,250 hybrid striped bass fingerlings and 500 adult stripers (11 to 13 inches), the latter donated by Pennsylvania Power and Light Company, were stocked in 1988. In 1989, because striper fingerlings were not available that year, only 14,500 walleye fingerlings were planted. Last year, the lake received 45,000 small walleye fingerlings, 5,100 large walleye fingerlings and 7,250 two-inch-long striper hybrids.

Kaufmann says the hybrid fingerlings stocked in 1988 should be about 13 to 16 inches now, and the adults should measure about 18 to 19 inches long. Kaufmann says that stripers grow to about four inches long during the first growing season, eight inches the second, 16 the third, and 18 to 22 inches long the fourth season. At this length, Kaufmann said, the fish will generally not get any longer, but they will get heavier. He's already seen a 13-pounder and has heard that a few 14- and 15-pounders were caught.

One angler who has witnessed Nockamixon's birth, death and resurrection is Jonathan Greaser of Sellersville. Greaser, an avid fly fisherman, considers "Nocksie," as it's called by locals, his favorite fishing location because of the variety of fish and the lake's potential. He does so well there that last season he managed to land a hybrid striped bass that earned him recognition as an IGFA world record-holder. This award was presented for his predawn catch of a 12-pound, 27-inch striper in the 6K (12-pound-test tippet) category. The fish had a girth of 22 inches and beat the previous world record set back in 1983 by a gal from Kentucky who caught a three-pound, 14-ounce striper.

This angler has a knack for catching stripers and walleye when others go fishless. His secret: Fly fishing gear and knowing the water he's fishing.

Finesse is required in handling this delicate hardware, but it seems that fly fishermen like Greaser are outfishing the hard-tackle boys by a wide margin. According to Greaser, stripers and walleye in Nockamixon have gotten used to seeing plugs, spoons and jigs. Throw a carefully tied fly and the results may be surprising.

Success secret

Greaser uses another secret for success. He often catches his walleye, one of which weighed 6 1/2 pounds, by wading. When most walleye anglers are in mid-lake plying the deeper depths from their boats, Greaser wades the shorelines.

Part of Greaser's formula for success is to be on the water when the fish are "on-feed."

"I go to Nockamixon because it's close to my home, and I go there often enough to know when the fish are on and when they're not. You can almost set your clock by these times. Predator fish generally eat twice a day. And if you can be there at one of those two times, all you have to do is throw the right thing," Greaser says.

In his case the "right thing" are flies that imitate alewife or gizzard shad for stripers and leeches for walleye. His flies are a bit different from the freshwater variety because they're bred from saltwater patterns. Greaser begins by using stainless steel size 3/0 hooks. He uses these mainly because they're a bit larger and heavier than regular hooks and they cast farther and sink faster. He then ties a Deceiver pattern using chicken or saddle hackle, a body of tinsel, a collar of goat or skunk and a silver accent wing of Flashabou.

Angler Jonathan Greaser of Sellersville shows one of the stripers he fooled last November at Nockamixon. Part of Greaser's success is to be on "Nocksie" when the fish feed. "Predator fish feed twice a day," he says. "If you can be there during one of these times, all you have to do is throw them the right thing."

Greaser's striper tackle includes a nine-foot fly rod for nine-weight line. He ties his alewife-gizzard shad imitation (right and below) on a stainless steel 3/0 saltwater hook.

Controversy

For walleye, his leech pattern consists of black saddle hackle with a body of palmered black hackle. Greaser's other reason for using stainless steel hooks is that the fly lasts longer, but he points out an interesting controversy regarding their use.

"Some people still believe that when you break off a fish, stainless steel hooks won't rust out of a fish's jaw. I pinch down the barb and sharpen it. This allows the hook to fall out of the fish's mouth, which is what happened to my IGFA record fish when I got it in the boat," Greaser says.

To substantiate his method, Greaser says he has had fish break his line, but he has never had a hook fall out of a fish's mouth while fighting one.

Another advantage of using flies, he says, is that a fly is practically weightless because it's made of feathers and hair. "Stripers are less apt to throw a fly in comparison to a heavy crankbait. They won't shake a fly loose as easily," he says.

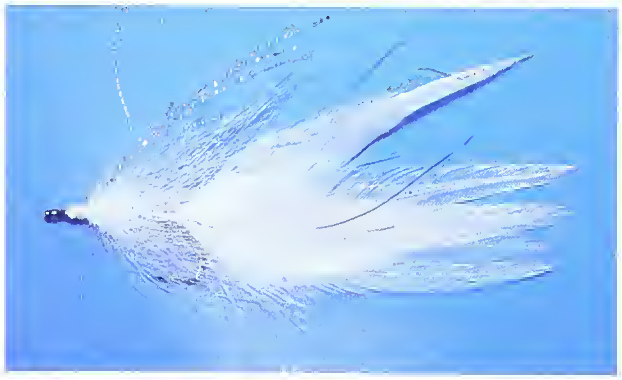
His fly tying creations are connected to a 10-pound tapered leader that's joined with a size nine weight-forward floating line. All this spools onto a large-capacity fly reel.

"This large reel is necessary because during a fight a striper will run out all the fly line and almost all 100 yards of backing," Greaser says.

He uses a nine-foot fly rod that has a heavy butt. "The added backbone this rod has is especially important when bringing a striper to the boat."

Shallow areas

As for fishing Nockamixon, Greaser was open and honest about his methods. His strategy is to fish the various shallow areas because that's where stripers and walleye corral baitfish.



"There are many different shallow areas on Nockamixon, particularly around the points and coves, and at night, predator fish herd the baitfish into the shallower water. The key is to go there often enough to learn these places. Unless pollution or something changes it, these hotspots will remain the same and fish will always congregate there."

Greaser says that the majority of fish in Nockamixon are at Three Mile Run in the fall and at the dam in spring. "So theoretically this pattern should hold every year," he says.

As for timing, Greaser always fishes at night. His best success comes right after dusk or before dawn.

"Striped bass and walleye, in particular, are light-sensitive, so they feed during these low-light levels. But they don't necessarily feed at midnight when it's pitch black," says Greaser. He's quick to point out that stripers feed only for about 15 to 20 minutes, so you have to be there at the right time.

In spring, Greaser usually looks for linesiders, as they're often called, around places where rivers or streams enter the lake. When he finds bass chasing baitfish, he aims his cast among the fleeing bait.

"Once hooked, a striper strips out line and makes a good first run. When you get the fish 'on reel' and he starts shaking his head, that usually means he'll do that until he's exhausted, and it's generally a smaller fish. But if he shakes his head and takes off again, that means you probably have a larger, stronger fish."

As for another record fish, the Sellersville angler is already trying to break his current record. And he may do it this year.

"The Fish Commission has electrofished stripers in Nocksie in excess of 13 pounds. And because these fish grow about two pounds a year, we should see more fish in the 14- to 15-pound range this season," Greaser says.

Even though his main pursuit is stripers, he fishes for other species. He's already caught a walleye that was three times larger than the world IFGA record, but didn't realize it at the time. During this catch he had the wrong size tippet for that particular fish.

Greaser regularly takes muskies, largemouth bass and crappies from Nockamixon. He favors crappies because he says they're fun to catch on a fly rod and are excellent eating.

So if you're at Nockamixon and see a tall, slim, mustached fly fisherman sporting an IGFA world record button on his jacket, chances are it's Greaser doing what he loves to do at a place he loves to do it.

ANGLERS CURRENTS

Fish Commission Acquires Elk Creek Property

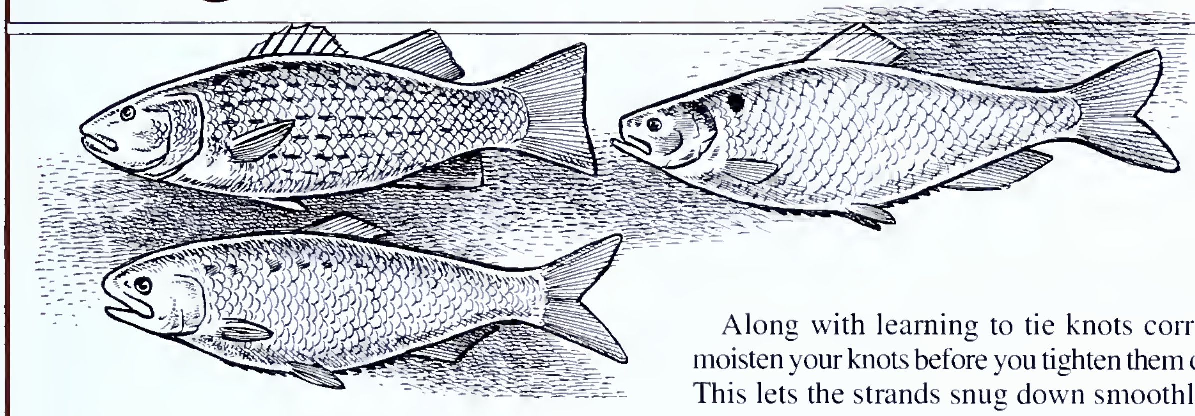
Earlier this year, the Fish Commission acquired 57 acres of prime access property adjacent to Elk Creek on the shores of Lake Erie in Girard Township, Erie County. The property has long been recognized as an important site for future development of public fishing and boating access to Lake Erie, and it has been considered for public purchase for nearly 30 years. The site also provides excellent shore fishing for salmon and steelhead trout.

The Fish Commission has been negotiating for three years with the owners. Partial funding for the $757,000 property came from the Pennsylvania Division of Coastal Zone Management and from Erie County.

The Commission is not planning to change public access at this time. Developing the site and raising the necessary funding will take years. In the meantime, fishermen still have access to the shores of Elk Creek and Lake Erie.

Angler's Notebook

by Sam Everett



Along with learning to tie knots correctly, moisten your knots before you tighten them down. This lets the strands snug down smoothly.

To turn a dry fly into a wet fly, oil it. It won't float, but it'll remain just under the surface, where it might attract trout feeding on insects just below the surface.

There are about 100 known species of mayflies nationwide. They belong to the insect family known as Ephemeridae. Mayflies live underwater for six weeks to some three years. They live as aerial or terrestrial adults only for a day or two.

Crayfish make excellent live bait for a variety of Pennsylvania gamefish. There are some 350 different crayfish species worldwide, and a 1906 publication claims that in Pennsylvania there are nine crayfish species.

Time is an important factor in releasing fish. Play and release the fish as quickly as possible. Don't play the fish until it's completely exhausted.

A bivisible fly is a good pattern to try to locate trout. Trout may not wallop bivisibles all the time, but they do rise to inspect these offerings. When you see that trout are interested but not taking the fly, change to a fly that more closely resembles what the trout are feeding on.

Striped bass, shad and herring are anadromous fishes—they live in saltwater but ascend freshwater streams and rivers to spawn. Eels are catadromous—they live in freshwater and travel to saltwater to spawn. Anadromous fishes and catadromous fishes are diadromous—they have the ability to change their physiology to live either in saltwater or freshwater during some phase of their life cycles.

Your boat's capacity plate tells you vital information you should heed. The number of seats in your boat, or the apparent number of people that could sit in your boat, doesn't determine its capacity. Among other important details, the capacity plate tells you how many people you can safely have aboard in calm conditions.

The three most common fish and fishing rules and regulations violations in 1990 of a total of 1,304, were inland seasons, sizes and creel limits (457); fishing in approved trout waters (411); and devices—gamefish, fishbait and baitfish (185).

In 1990, there were 2,585 violations of general boating regulations. The most common were personal flotation devices (1,273), minimum wake speed (282), lights (242), water skiing (228) and fire extinguishers (141).

illustration- George Lavanish

PENNSYLVANIA FISH COMMISSION

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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NOTES FROM THE STREAMS

Bemoaning Bazooka

While on boat patrol on the Susquehanna River in the vicinity of the PP&L Brunner Island Power Plant, I noticed a 10-foot rowboat within 100 feet of an intake tower. Two huge signs caution boaters from approaching within 200 feet of the towers. When I approached the boat, I noticed that the operator was the same man who I arrested two years ago for the same violation in the same area. It is illegal to boat within 100 feet of water siphons or intake towers. I explained the dangers and risks involved, because not only was this man boating in a prohibited area, but his boat was anchored, too. After settling on a field acknowledgement, the man told me that 10 minutes before I arrived he had opened up a piece of Bazooka bubblegum. He showed me the comic strip that was enclosed in the wrapper. It read: "If you don't play by the rules, don't complain if you lose!"—*DWCO Dave Eichler, northern Lancaster County.*

Parental pressure

"Enclosed is my check for the violation my son, Todd, committed. I want to thank you for doing your job. I hope you get a lot more people. If people knew that throwing a can away would cost them $25, we would have a much nicer outdoors. Keep up the good work."

I received this letter last summer from the father of a violator.—*Mike Wheale, WCO, northern Allegheny County.*

Opening day buffet line

On the opening day of the 1991 trout season I was involved in a Fish Commission angler creel survey on Penns Creek below Coburn, PA. This survey, which was conducted by the Fisheries Management Area 3 crew, involved interviewing anglers to determine how long they had been fishing and how many trout by species they had creeled. We punched a hole with a paper punch in each trout's tail in each angler's creel so we wouldn't count the fish more than once if the same angler were interviewed again. I was working my way downstream when I came across a group of approximately 20 to 25 anglers at a campsite beside the stream. They had been fishing and were taking a mid-morning break.

Now I knew I had run into a problem—how to interview all these anglers, check their fish and take up as little of their time as possible without creating mass confusion. After thinking about this for a minute, I walked to their campsite and identified myself as a Fish Commission employee and explained what we were doing. I told them the information I needed and asked them all to assemble in a line-up. One guy volunteered to tail-punch his buddies' fish as they came through the line. With all this set up, I started by asking everyone who had not caught fish to raise a hand and then step out of the line. Three guys promptly did so, and after writing down this information, I then turned my attention to the successful anglers in the line.

Everything went smoothly. Each angler came through the line, gave me the information and got the fish tails punched. I couldn't help wondering what other anglers were thinking as they passed by. It looked like a bunch of hungry guys going through a buffet line. When I got to the last guy he showed me his trout already half-eaten and wrapped in aluminum foil. The volunteer tail-puncher promptly "tail-punched" the aluminum foil and thus ended my mass interview.

Overall, it turned out to be a long day with a lot of interviews, but thanks to many anglers who were willing to give me a minute of their time, everything went smoothly.

To the big group of anglers and the volunteer tail-puncher who went through my "buffet line," a special thanks goes out—especially for the hot meal they provided me on my second trip down the stream.—*Dirk Remensnyder, fisheries biologist aide.*

"Cops"

While patrolling Lake Wallenpaupack by boat, DWCO Bieski and I observed four men at the end of one of the docks. Viewing the men through binoculars, we determined that three of the men were fishing and no fishing licenses were in sight. We approached the dock and talked with the would-be fishermen, and we informed them of the stiff penalty for non-residents fishing without a Pennsylvania fishing license. All three opted to settle the violations on field acknowledgements. However, one gentleman needed to walk back to the cabin for his identification and money to pay the fines.

Officer Bieski stayed with the patrol boat and discussed boating regulations with the one man who wasn't fishing. The other two "actors" accompanied me to shore where we sat on rocks as I started to fill out the required documents. There was quite a bit of kidding going on between the three men still at the lake when I heard someone farther up on shore yell, "Officer!" As I turned I saw the individual who had gone for his ID standing with a video camera trained on me. "Smile and wave. Mom's not going to believe this," he said. Suddenly, all three violators started to sing, "Bad boys, bad boys, what ya gonna do? What ya gonna do when they come for you?" I instantly recognized this tune as the theme music from the television show "Cops."

After the paperwork was done, complete with an autograph session, and the fines paid, Officer Bieski and I pulled the patrol boat away from the dock. Another yell from shore and the camera was on us again with the "director" yelling "lights and sirens." A quick flash of the blue light and a blast from the horn brought about the final scene of this totally homemade video. Do not wait for this movie to come to a theater near you.—*WCO William Carey, Pike County.*

Unpredictability

Last April I launched my boat at the Sandts Eddy Access during the height of the shad run. The day was Wednesday, cloudy but mild. By 7:15 in the morning, no parking spaces were left, and people began parking their cars all around the access. I had to wait a few minutes to launch. By the time I retrieved my boat, around 1:30 p.m., the place was a zoo—long line waiting to launch and retrieve, cars idling on the road waiting to get into the access, and a 15-minute wait for a turn at the ramp.

The next week I launched again at Sandts Eddy, this time on a Thursday. The day was beautiful—cool early in the morning, sunny and balmy by midday. When I launched at around 7 in the morning, the parking lot was only half full. When I retrieved my boat, again around 1:30 in the afternoon, the access looked deserted. Parking spaces were still available, and I didn't have to wait to retrieve my boat.

Just goes to show that shad fishermen are as unpredictable as the shad.—*Art Michaels, Editor.*

Marietta mystery

The new Marietta Access on the Susquehanna River. Put up a nice wooden signboard. Discovered same missing within a week. Where did it go? Only clues were two square holes in the ground where the 4x4 posts had once been.

Put up another board. Cemented posts. Figured it would take a chainsaw to get this one. Missing a week later, posts neatly sawed off at ground level. Didn't realize there was a market for used signboard with stubby legs.

Put up another signboard. This time cemented posts and bolted steel stop sign posts to the 4x4s to deter chainsaws. Man called a week later reporting that someone in a 4WD truck had thrown a cable around the signboard and was in the process of pulling it out. Man didn't get license number of truck. We didn't get truck. Truck got signboard.

Stubborn determination. Placed new signboard on a gigantic oak tree next to the parking lot. Used a ladder to secure it well out of reach. Guaranteed safe from 4WD vehicles and too big for chainsaws. Sweet success.

A week later a lightning bolt struck the tree and felled it, smashing new signboard to smithereens. Yielded to a higher authority and gave up on signboard at Marietta Access.—*Kim Pritts, WCO, northern Lancaster County.*

Rescue

WCO Greg Jacobs helped rescue a woman from Hereford Manor Lakes, in Beaver County. At 3 a.m. on March 2, 1991, Jacobs, who lives near Hereford Manor lakes, awoke to the sound of someone beating on his door. After leaving his house, he noticed a woman "floating face-up and moaning" approximately 150 feet from shore. The woman and a man, who had swam safely to shore, were in a car that had rolled into the lake. Jacobs immediately called for back-up. Jackson Township Police Officer Wayne Seibel tied a throwbag around his waist and entered the frigid, 40-degree water. Jacobs fed Seibel the slack line and saw that it was going to be about 35 feet too short. As Seibel reached the woman, Jacobs swam to the end of the rope and ran onto shore pulling Seibel and the woman to safety. The woman suffered from hypothermia and was immediately covered with blankets. She was then flown via Life Flight to Allegheny General Hospital. As of March 3, 1991, her condition was upgraded from critical to serious. The man refused treatment.

At noon on March 3, 1991, the car, which was found upside down in 25 feet of water, 30 feet from shore, was towed to shore with the help of the Beaver Falls dive team.—*Ann Kreisler, Editorial Intern.*

Look before you dip!

It was a dark, chilly night. Godfrey Run was filled with salmon, ranging from seven to 10 pounds each. Officers Duane English and George Jarosik and I were standing in the darkness under the trees, observing two anglers salmon fishing in Lake Erie.

Two individuals came walking down the road and stopped 25 feet from us to look at the fish. They were completely amazed at the fish in the creek! The other two anglers (at the mouth) joined them along the bank.

One of the individuals commented that a Fish Commission car was parked up the road. The two anglers said they were fishing for two hours and did not see any officers in this area and that maybe the officers were down along the shore somewhere.

As the foursome looked at the monstrous fish in the creek, they became braver. Finally one said, "I'll keep watch down on the beach, one of you can watch up the road and the other two can dip some fish for all of us." This sounded like a great idea to all four. Two of the poachers leaped into the water and chased the fish.

The other two offenders took their positions. After a few minutes one of the observers came walking rapidly back to the creek. The two poachers in the creek became so scared, they bolted out of the water, tossing their net into the trees, barely missing Officer Jarosik.

While the poachers were determining that no one was coming and that they should continue, we came out of the dark with our flashlights on. What a surprise this was to the poachers! They never figured that the Fish Commission was watching them from 25 feet away and could hear their every word.

While we addressed the foursome for nursery waters violations, one of the individuals (who was in the water) commented that he had learned a very expensive lesson over this.

We asked him what this lesson was. He said, "Look before you dip!"—*DWCO Nick A. Clement, Erie, PA.*

Needed help

In a recent letter from Ron Heleniski, who works for the Maryland Department of Natural Resources, Ron told me his secret for catching fish. He was having little luck fishing for rainbow trout in two mountain lakes in southern Utah. Knowing he was about to depart on a trip to fish the famous Green River between Utah and Wyoming, he decided to change his technique. When he reached the Green River area, Ron decided to wear his "I'm a Pennsylvania Angler" hat to stay the western sun. That was all he needed. Once the fish saw what they surmised was a Keystone State angler, there was no contest. Ron's drought ended in a flourish of foot-long rainbows. He claims that the hat made the difference.—*C. Blake Weirich, Aquatic Resources Planning Coordinator.*

Dangerous kiss

My work as boating accident review officer for the Commission partly involves the grim task of reviewing reports and compiling statistics about boating fatalities, injuries and property damage. Needless to say, this is not a pleasant task. A recent report was an exception. It seems that a young couple was rowing a small boat on a Pike County lake when they capsized, resulting in a minor case of hypothermia for both individuals. The report was not unusual until I got to the section asking, "What, in your opinion, caused the accident?" The cause was listed as "kissing."—*Dan Martin, Bureau of Boating.*

Backtalk

Pennsylvania Angler invites all Commission employees and volunteers to contribute to "Notes from the Streams."

The Commission also invites readers to write letters to the editor in this space. If you have an idea on *Pennsylvania Angler* content, a question about the Fish Commission or about fish and fishing, or a helpful idea for anglers or boaters, address correspondence to: The Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673. The Commission considers only signed correspondence for publication and response, and letters are edited for clarity and space considerations.

Dye in the Delaware

A harmless red dye was introduced into a 125-mile stretch of the Delaware River in May and late last summer as part of a study to simulate the movement of potential waterborne pollutants under varying stream flow conditions. The dye, known as Rhodamine WT, was poured into the river at various locations between Hancock, NY, and the Delaware Water Gap. The dye wasn't visible beyond a few miles downstream from the injection points. However, it was still sensitive to monitoring instruments, called fluorometers.

During the May phase of the study, the travel time of the dye was checked about every 10 miles with each sampling site monitored continuously for up to 24 hours after the dye first appeared. Personnel from federal, state, regional and local agencies, along with volunteers, collected the water samples.

The measurements of dye concentrations tell scientists how fast the dye moves downstream as well as trace its dispersion pattern throughout the water column.

Results of the study provide essential data on the downstream movement of pollutants from potential toxic spills and sewage treatment plant discharges. The information is used to develop water quality/toxic spill models for this reach of the river.

The first stage of the study provided data for medium to high flows, and the latter phase will model low flow conditions of the river.

The study is a joint effort of the Delaware River Basin Commission, the National Park Service, the U.S. Geological Survey and the Upper Delaware Council. Similar "time-of-travel" studies using dye have been conducted successfully on other basin rivers.

NOTICE

to Subscribers

Act 1982-88 provides that certain records of the Pennsylvania Fish Commission are not public records for purposes of the Right-to-Know Law. This means that the Fish Commission can place appropriate conditions on the release of such records. The Commission has decided to make the subscriber list for *Pennsylvania Angler* available to statewide nonprofit, nonpartisan fishing, boating, and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do NOT want your name and address included on the subscriber mailing list to be made available to the described organizations, you MUST notify the Commission in writing before January 1, 1992. Send a postcard or letter stating, "Please exclude my name and address from *Pennsylvania Angler*'s subscriber mailing list." Send these notifications to Art Michaels, Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673.

Art Michaels

Meet Marie Maddalena, a secretary for the Fish Commission Fisheries Management Division. Along with providing clerical support to the Division, Marie assists in processing stream, river and lake reports written by the biologists and technicians. These reports give an overview of the waters of the state including historical information, chemical profiles, fish population, ownership, and the Fish Commission's fisheries management plan for specific waters. Marie enjoys her lunchtime feeding the fish in the stream near the building where she works. She's been a Commission employee since 1987.

Proper Care Keeps Life in Old Waders

It's still fishing season and you can't wait to get down to the stream and wade right in. You have your rod and reel, tackle box and lucky hat. You're all set. Only now do you realize that your waders are as stiff and cracked as an old weather-beaten tire.

This doesn't have to happen every year. Proper care and storage is essential to getting the maximum use out of all your outdoor equipment. Red Ball, a leading wader manufacturer, has some helpful suggestions for extending the life of your waders.

- Proper fit may determine how long your waders last. Waders should be loose enough to allow for bending and stretching, and for wearing layers of clothing underneath. Do not over-tighten straps or suspenders. Excessive pressure strains the fabric and may cause separation of the material.
- During use, avoid snags or sharp debris that may puncture or tear your waders. If a puncture does occur, most waders can be patched easily with a kit from the manufacturer.
- After you have finished for the day, waders should be washed with a mild soap and water solution. This removes damaging sand, salt and fish scales. Treat the rubber portions of your waders with a rubber protector.
- If the inside of your waders gets wet or damp, turn them inside out and hang them in a dry place with ample circulation. If your waders have innersoles, remove them and let them dry separately. As a general rule, do not use hair dryers to speed the drying process. The concentrated heat can damage the material.
- If you must fold waders for storage, do not fold the boot portion. The boot becomes distorted if left for an extended period.
- When storing waders at the end of the season, place them in a air-tight plastic bag and hang them vertically with the soles up. They should be placed in a cool, dry place, away from direct sunlight and excessive heat or cold. Remember that rubber waders are susceptible to the harmful effects of ozone. Do not store rubber waders near electric motors and fluorescent lights. They emit ozone, which can cause vulcanized rubber to become hard and brittle.

On the Water

with Dave Wolf

Ethics

Ethical standards are often dictated by law. Littering, taking more than the limit, blocking access to private property and a host of other violations will cost you money. Many ethical standards are an individual choice and remain so, but if abuse of privileges continues, more and more laws will be written to add to the hundreds already on the books.

I think there are far too many laws now, and still I realize that regulations are necessary. It is a shame that anglers, boaters and outdoor users need to be restricted in their pursuit by the threat of the law rather than one's own conscience. We seem to be a greedy lot—not only fishermen but as a society in general. Lifestyles do not change simply because someone picks up a fishing rod or climbs into a boat.

Many of the problems dealing with ethics are the result of greed. The angler who crowds his way into a pool of fishermen and often casts his line over another has to be viewed as greedy. He wants his limit of trout without regard to anyone else's fishing pleasure. The person who tosses a can or paper onto the landscape or into the water feels the same way. He is going to discard his junk whether or not it has an affect on others.

Everyone who has fished or boated for some time has been subjected to the misdeeds of others. They have been crowded out of a pool and found litter bobbing in their lake or flowing past them in a stream. They probably have been nearly swamped by a larger boat or worst of all, been denied access to property they had once fished as the result of someone else's wrong-doings.

The lack of ethics runs deeper than you may think. Playing and releasing fish on a catch-and-release area to the point where they will not survive does not fall under acceptable ethical standards. Photographing fish often means excessive handling for the photographer to take photos from several different angles. The process is often long and many times the photos are sold for good money, but the fish often does not survive the ordeal despite the fact that it is released. It is my opinion that fish that are going to be handled in an excessive manner should be harvested, if and where it is legal. If not, the well-being of the fish should be placed above that of the photograph.

The problem lies in the idea that ethical standards are each person's own perception of right or wrong. Because individual standards did not meet the necessary criteria to keep our environment healthy, our fish populations strong and our waters open, laws had to be introduced. In spite of the fact that more and more laws find their way into the Fish and Boat Code every year, all aspects of fishing and boating cannot be covered and the manpower to enforce the laws has not grown fast enough to keep every violator under the watchful eyes of waterways conservation officers. I compare it to everyone who breaks the speed limit being pulled over by a police officer—it is simply an impossible task.

Dave Wolf

I would like to believe that the problem of ethics will turn around and that all boaters and anglers will be law-abiding ethical sportsmen. For this to happen our entire society will have to become law-abiding and ethical.

The goal is being pursued and although it is extremely idealistic, in time we can and will come closer to having a fishing and boating fraternity that will abide by the lofty goals of ethics. I believe that the key ingredient will be respect. If we teach our children to respect our waterways and their inhabitants, from our forested brooks to our placid lakes, and when they realize that nature holds the key to the future of quality living, then we will be on the right course.

For now it is up to us all to instill an unreproachable ethical standard in our children and our friends and we will have to labor at the oars to accomplish it. But perhaps sometime in our lifetime we will be able to lift our paddles from a gliding canoe and have nothing but clean water dripping from them.

Boat Maintenance and Protecting Our Aquatic Environment

by Cheryl Kimerline Hornung

The rapidly growing number of boats on our waterways pressures our ecosystem today more than ever, threatening our water quality and aquatic life. It is essential that we follow the best environmental practices in using and maintaining our boats.

Anti-fouling paints

Keeping your boat's hull clean and free of growth is important. Faster boat speeds and lower fuel costs are two major advantages, but there are other important concerns.

All anti-fouling paints work by releasing toxic chemicals from the hull into the surrounding water. Generally, the more effective the paint, the more toxic its ingredients. Copper-based paints usually keep a hull clear for a year or more and contain less toxic metallic compound.

Avoid the newer tin-based paints (such as tributylin or TBT). TBT is one of the most toxic chemicals introduced into the environment. It has been found to affect aquatic life adversely. Human exposure to TBT may also be related to a variety of health problems.

Decks, topsides

Many products are available for cleaning decks and topsides. Their toxicities vary widely. Careful use of these cleaners is essential to keep them from washing overboard.

All cleaners, bleaches, teak cleaners, paints, varnishes and thinners should be considered toxic and handled accordingly. Try to use a non-phosphate detergent and scrub brush instead of teak, deck and hullside cleaners. Minimize the use of these materials while your boat is in the water to avoid spills.

Engine maintenance

Maintaining your inboard engine can cause special problems because of the materials involved—gasoline, oil and anti-freeze. A single quart of oil when spilled can cover an area up to two acres.

When changing oil, wipe up spills immediately. Consider placing a bilge "pillow" (an oil-absorbing sponge available at many marine supply stores) in your bilge to remove oil from the bilge water. In this way the oil will not be pumped overboard by your bilge pump.

Keep the use of engine cleaners to a minimum. Drain old anti-freeze into a container for on-shore disposal. Use anti-freeze containing propylene rather than ethylene glycol mixtures. Propylene is much less toxic.

Inspect your rubber fuel lines regularly. The alcohol content of unleaded fuels can deteriorate fuel lines in several months. Replace fuel lines if they have deteriorated.

Avoid topping off your gas tank when refueling. This often produces small toxic slicks in the water.

Litter

Make sure every piece of trash goes in your trash container. Tin cans and pull tabs can injure both fish and swimmers. Waterfowl have been caught and drowned in plastic six-pack rings or discarded fishing line. The enjoyment of an aquatic environment can be destroyed by the view of floating trash washed up on shore.

The effect of a single boat may be insignificant, but multiply it by the 230,000 registered boats in Pennsylvania and the effects can be devastating. A commitment from us all is needed to follow the best environment practices while boating to save our fragile aquatic environment for the future.

Pennsylvania
ANGLER

December 1991/$1.50

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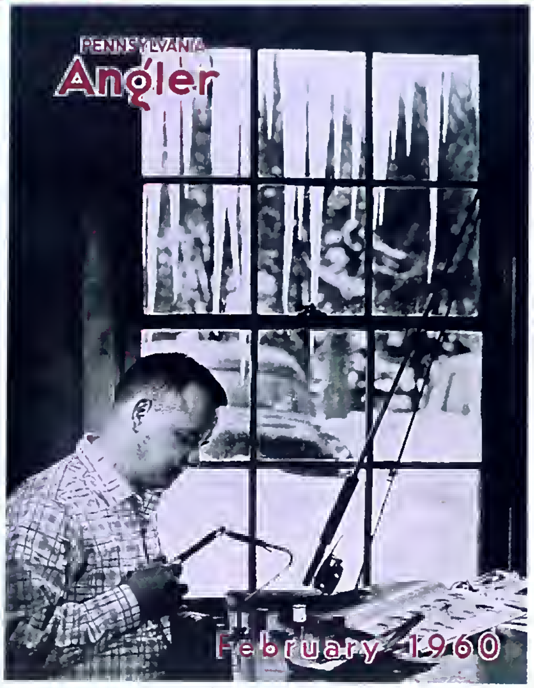

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Straight Talk

Commissioners Identify Seven Vital Concerns

Edward R. Miller, P.E.
Executive Director
Pennsylvania Fish Commission

Pennsylvania is fortunate to have a dedicated group of people serving as members of the Pennsylvania Fish Commission. Although the main role of the commissioners is to set policy for the agency and administrative staff, they also have frequent contact with the fishermen and boaters using Pennsylvania's aquatic resources.

To benefit from this pool of knowledge and experience, the staff determined that Commission input into the agency planning efforts was best obtained by circulating a questionnaire among the 10 commissioners. The staff grouped replies into four broad areas of concern, and items in each area were further sorted by common topics. The staff reviewed and compared individual replies in each topic, and it became apparent that the respondents agreed on seven issues.

These seven issues are:

- The need to upgrade warmwater fisheries management planning and provide a better understanding of the direction in which this effort is headed.
- The need to maintain an aggressive program of angler and boater access to all types of waters.
- The need for better intra-agency cooperation, communication and program coordination.
- The need to increase law enforcement staff.
- The need for an agency-wide long-term plan and direction for the future.
- The need to continue and enhance our education and information efforts.
- The need to house all Harrisburg functions and major administrators in our own facility.

There were three additional issues on which responses differed significantly. Included were the future emphasis and direction of the stocked trout program, law enforcement work priorities, and several organizational and management concerns.

The survey did not address the topic of future agency funding, but it was recognized by commissioners that this issue was an important part of the agency's future direction, priorities and program capabilities to meet public service needs.

The next step in this process is a staff review of all suggestions. Then, after establishing priorities, areas of common agreement will be pursued, and areas of opposing views will be further discussed so that a clear agency position on these issues can be included in comprehensive planning efforts. This process among commissioners, staff and the fishing and boating public is essential to effective planning.

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December 1991 Vol. 60 No. 12

Pennsylvania ANGLER

The Keystone State's Official Fishing Magazine

DEC 03 1991

***Pennsylvania Angler:* Serving Pennsylvania Anglers for 60 Years**
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The covers

To celebrate *Pennsylvania Angler*'s 60th anniversary issue, this issue's front and back covers show *Pennsylvania Angler* covers from the past. For a look at more covers dating from the 1930s, see page 4. Fly fishermen should read the articles on pages 10 and 12, and check out the confession that begins on page 20. On page 16 you can read about a conservation feat, and the conservation message in the article beginning on page 23 could raise a few eyebrows. As always, the annual volume index for this year's *Pennsylvania Anglers* appears on page 14.

1866-1991
125 years

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PENNSYLVANIA ANGLER:

SERVING PENNSYLVANIA ANGLERS FOR 60 YEARS

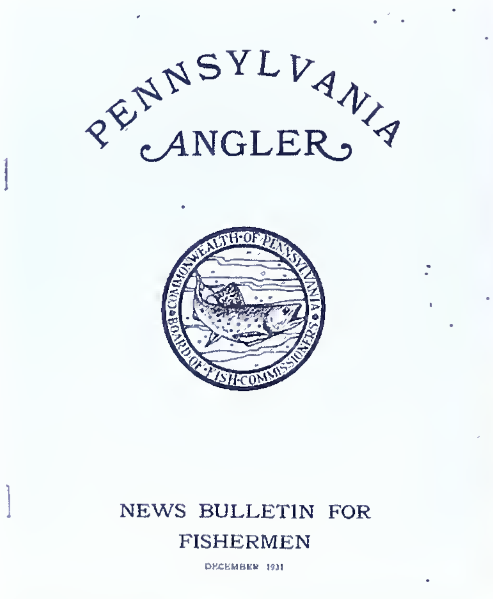
1866-1991
125 years

Our final 125th Commission anniversary article marks the 60th anniversary issue of *Pennsylvania Angler*. The *Angler* was first published in December 1931. Through the magazine's 60 years, much has changed—the price of a gallon of gasoline, our clothing, "popular" music, the movies we watch, the cars we drive. During *Pennsylvania Angler*'s first 60 years, the television, the jet engine and the computer were invented, astronauts first walked on the moon, and we began to fish and boat electronically.

During the magazine's first 60 years much has remained the same, too—our love of fishing, our passionate pursuit of conservation, our appetite for boating.

Reflected in the covers of selected *Pennsylvania Angler* covers are both the things that have changed and the things that haven't. I hope you enjoy viewing these *Angler* covers, and raising your eyebrows now and then as you note the changes and the constants.

Do you spot a friend, a relative, or maybe even yourself on one of these covers? Does a cover evoke a special fishing memory? Let us know!



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NEWS BULLETIN FOR FISHERMEN
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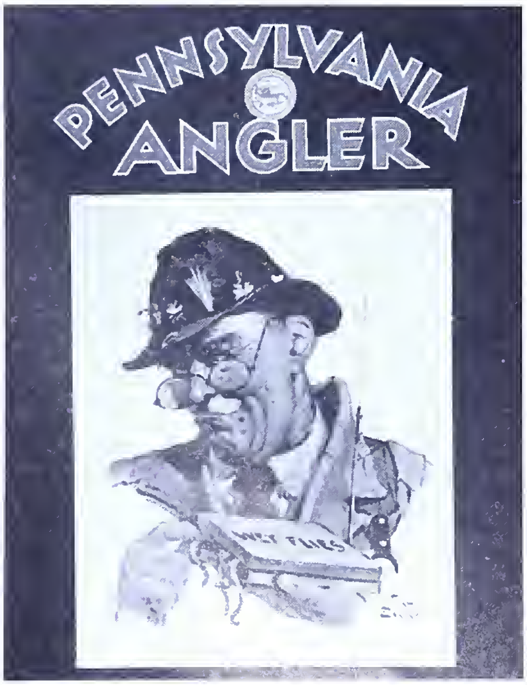

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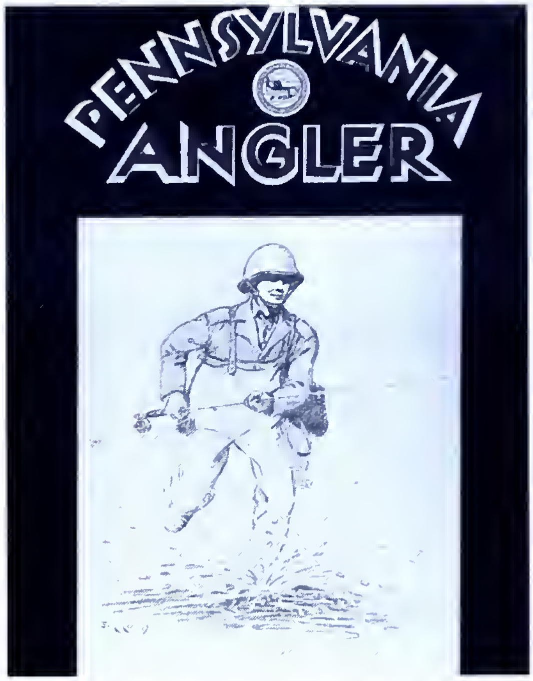

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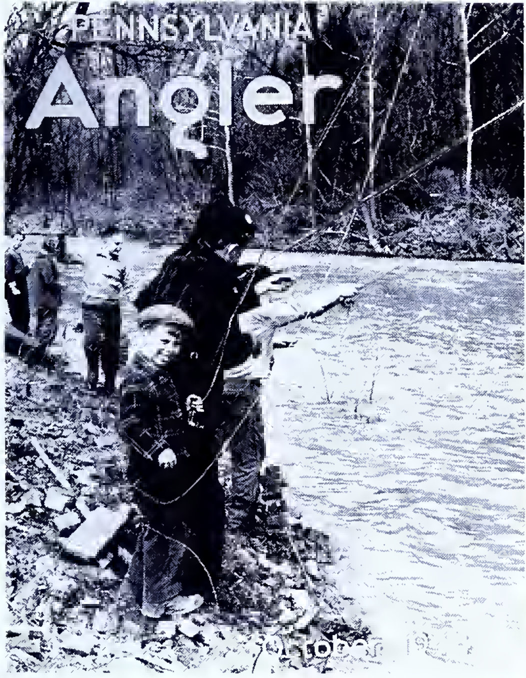

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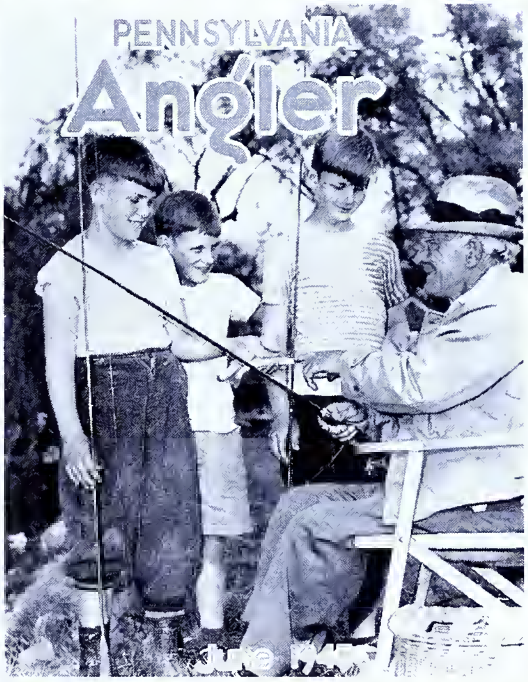

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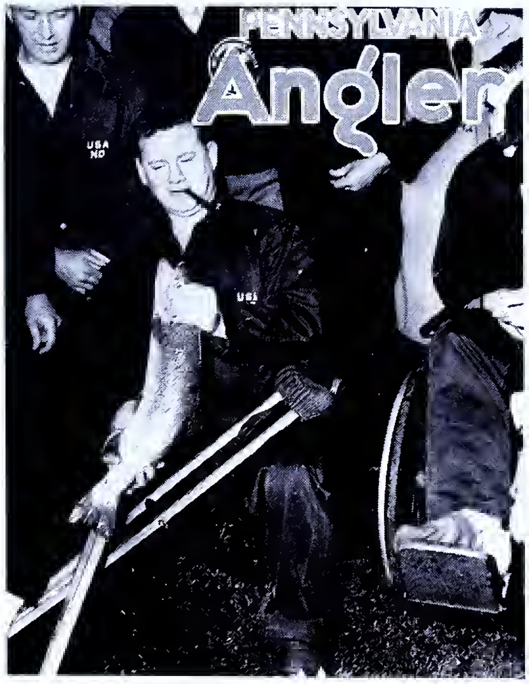

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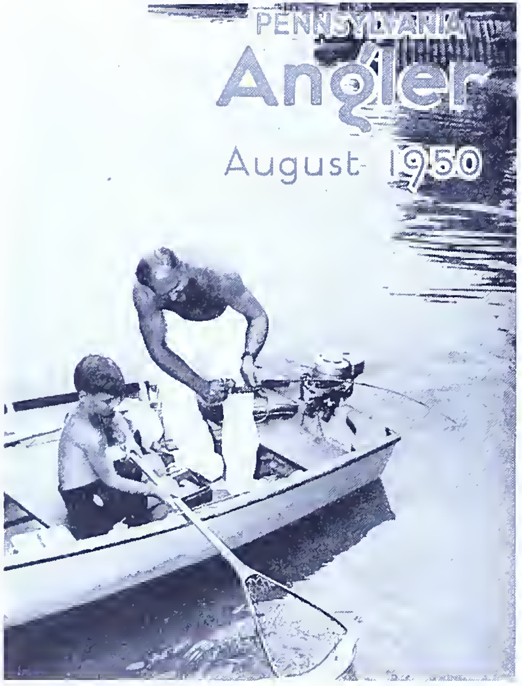

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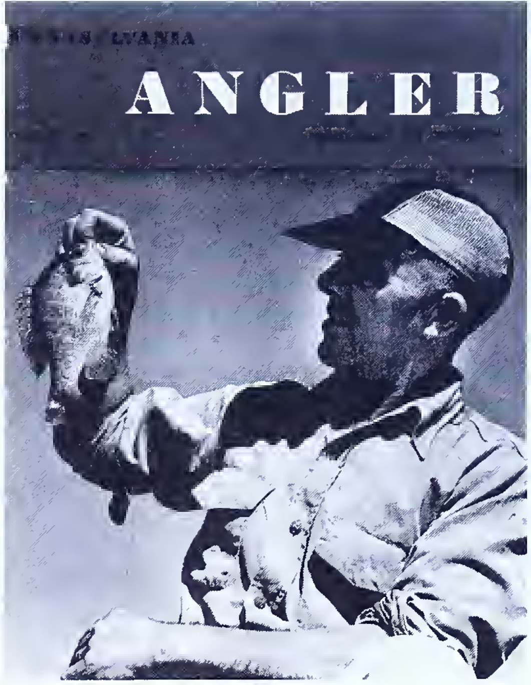

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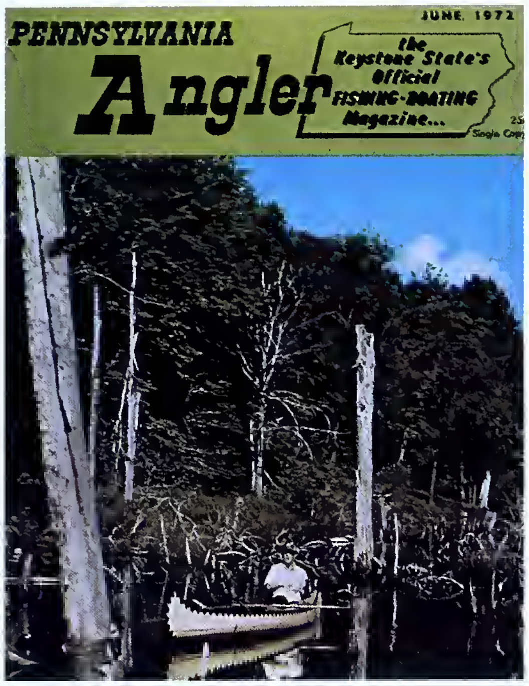

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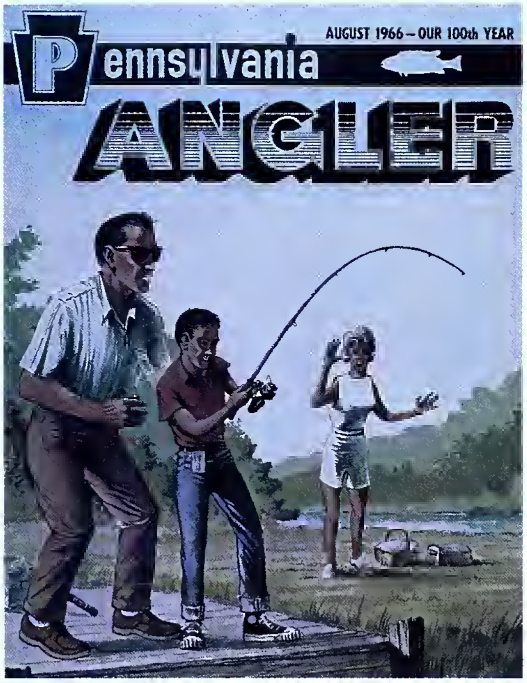

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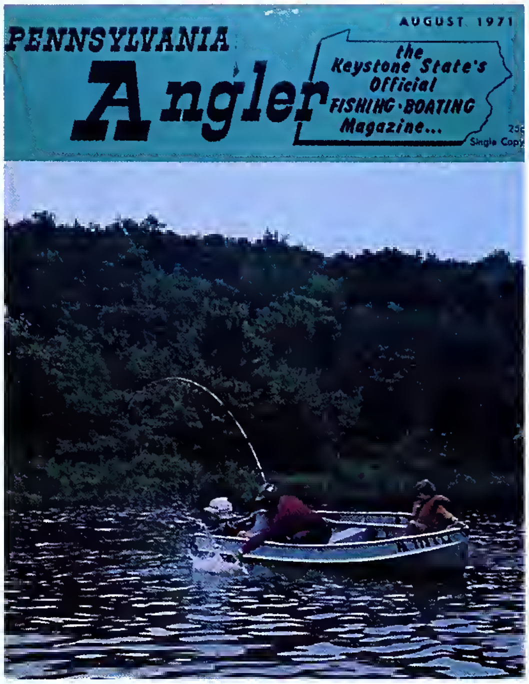

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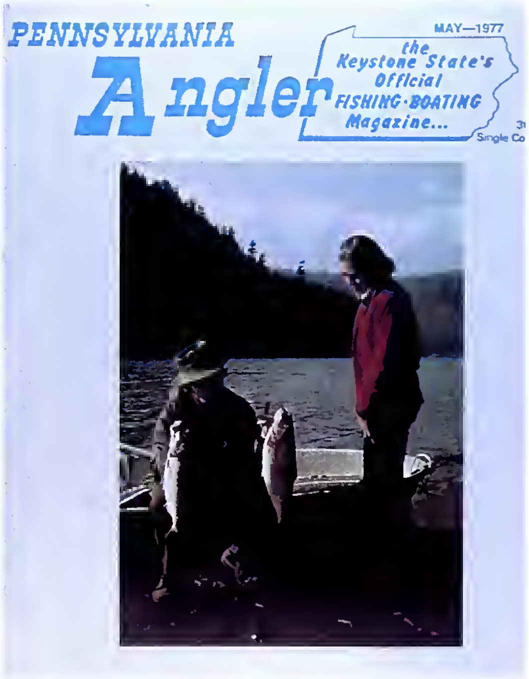

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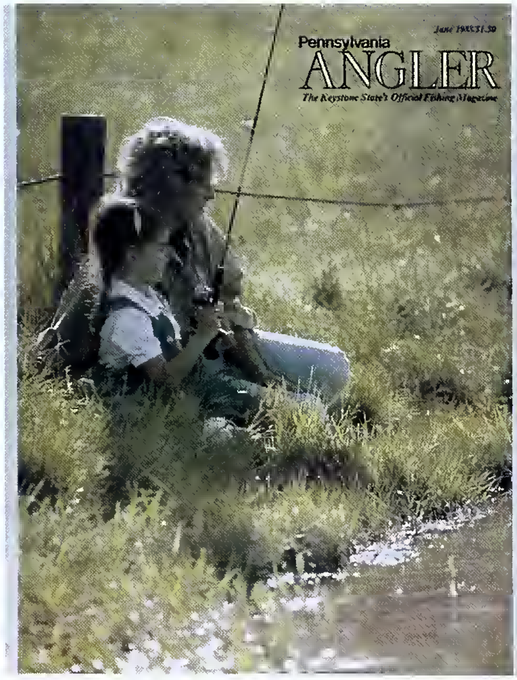

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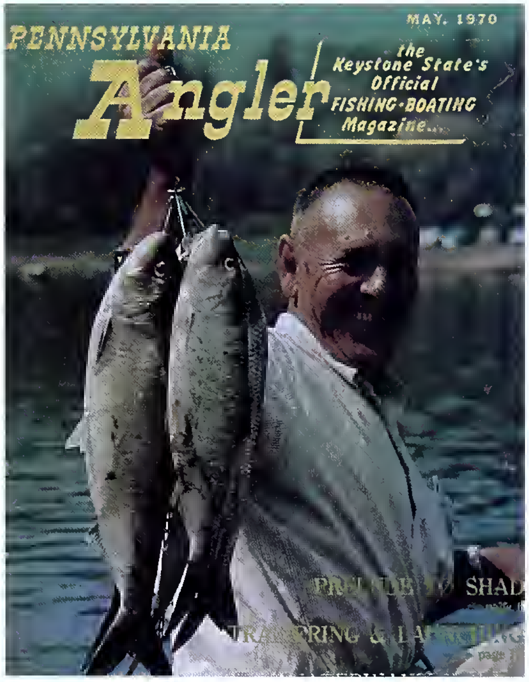

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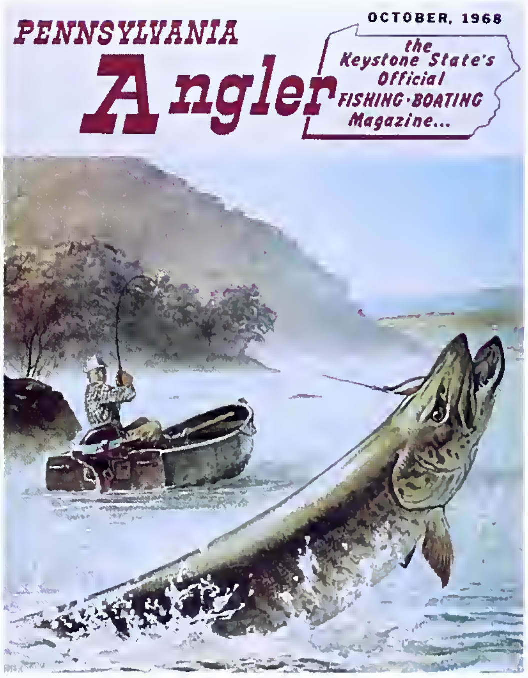

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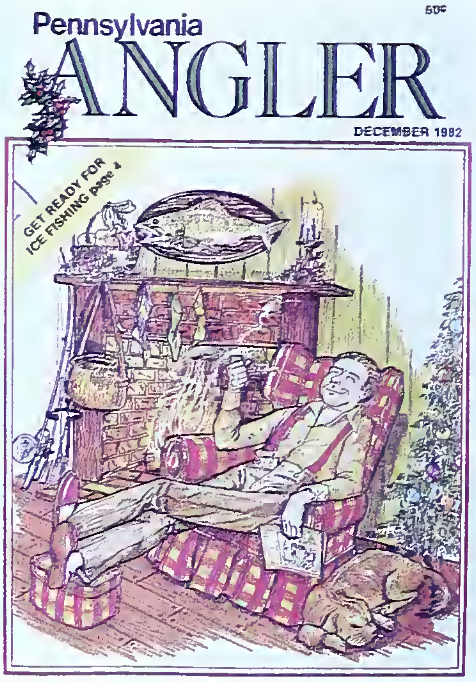

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The year 1991 marks the Pennsylvania Fish Commission's 125th anniversary.

See the bottom of page 3 for more details.

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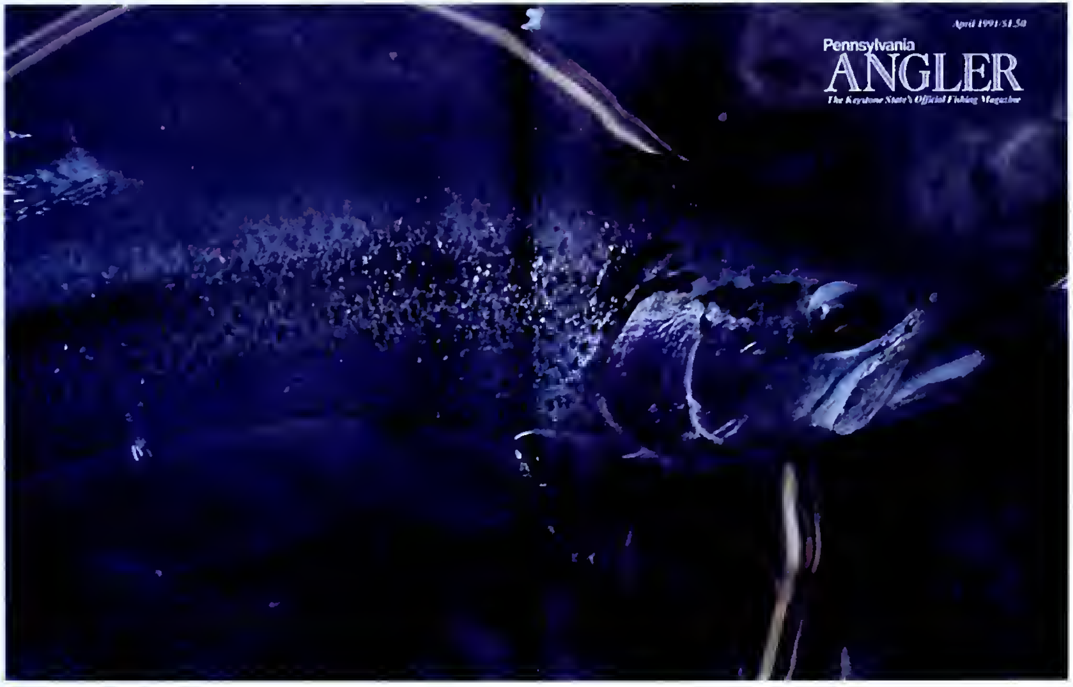

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Take Me to Your Leader

by Joel M. Vance

Mark Dauberman

The fly leader has only one function...and no, it's not to send you into a choleric rage when it throws a neat clove hitch over a limb 40 feet up in a tree. It is to disguise the connection of the fly to the line. Fish aren't intellectual volcanoes, but the more invisible a leader is, the more apt the fish is to snack on the fly.

Leaders come one-piece tapered at the factory, or tapered by a series of different diameter lengths knotted together, or finally, a level length of monofilament.

An angler can't taper one-piece leaders, but you can fashion knotted leaders. The major reason is to save money, but there also is creative satisfaction in customizing for length and strength.

A tapered leader costs about $2, but you can make a knotted leader for a fraction of that cost. You need to know the formula for tapering from leader butt to tippet, and the simple blood knot for joining two pieces of monofilament.

I enjoy experimenting with leader lengths and construction—

the thrill of creation on a minor scale. Maybe you'll stumble on a leader that isn't duplicated by factory leaders, but that casts like a dream with your favorite rod.

Every rod and line combination has special casting characteristics, and there is no way for a factory leader to be all things to all rods and lines.

I'm no great shakes as a fly caster and am especially prone to the wind knot, a simple overhand knot thrown in a leader by a careless cast. It weakens the line at the knot and a few wind knots make a leader useless.

Even if you never cast a wind knot or snap off a fly on a bush, you'll change flies frequently. Each time you do, you shorten the leader. Each time you replace a tippet, you shorten the next section back.

It doesn't take long to use up a nine-foot leader. What's better—tying a new one for a few pennies or spending two bucks for a factory leader?

If you carry spools of leader material in your fly vest, it's a matter of moments to tie a leader to fit the situation; if you depend on factory-tapered leaders, you're stuck with whichever lengths and tapers you happen to have.

The right leader for the fishing job depends on several variables. First is water clarity, which leads directly to spookiness of fish. Quiet, clear water demands a long leader with a fine tippet for minimum disturbance and shadow.

But if the wind or a rapids ruffles the surface, you can get by with a shorter, stouter leader. Regardless of fish species, a leader between six and nine feet is ideal probably 90 percent of the time.

The fly also influences leader length and strength. You can't use a 7X tippet to hurl a wind-resistant bass bug. A weighted nymph is like casting a brick and needs a stouter leader. But a tiny size 18 dry fly, cast to slick water, demands a long leader with a sleek tippet.

The fish species also play a part. Trout usually are moodier than bass and bass are more picky than panfish. In fact, you can fish for bluegills most of the time with a five- or six-foot leader of six-pound monofilament.

A brown trout on a dark night will hit a huge fly rod mouse tied on three feet of 20-pound monofilament. But the same brown trout in clear water on a sunny day will spook at a 12-foot leader with an 8X fairy's eyelash tippet.

You can add a lighter tippet to the existing one (or lengthen it) if trout are spooking from the leader. If the result doesn't cast well, add a heavier section in the middle of the leader. That's the advantage of the knotted leader—the ease of customization.

Sinking line

A sinking line doesn't need a long leader—six feet or less. If you're fishing for panfish with a sink-tip line, try a slider bug (bullet-faced) and an eight- or 10-foot leader. The sunken line jerks the bug under, giving it action similar to that of a jerkbait.

Strike indicators are invaluable to the sinking fly or nymph angler. There are many commercial indicators or you can color the leader butt section orange (or buy a commercial fluorescent orange butt). Some anglers color the knots to make a series of strike indicators (and also to serve as a crude depth gauge).

Famed fishing writer Ray Bergman had a rule of thumb for leader construction years ago that still works: A 7 1/2-foot leader takes six 16-inch strands, a nine-footer, six 19-inch strands, and a 12-footer, eight 20-inch strands. For salmon and steelhead (or large fish in general) Bergman used five 23-inch strands, tapering from.024 (roughly 35-pound test) to .014 (about 14-pound test).

More anglers are realizing that northern pike in shallow water readily hit large streamer flies. Use a shock tippet of eight or 10 inches of 30-pound or more monofilament to guard against the pike cutting the leader.

Knots

The knot for joining two pieces of monofilament together is the barrel or blood knot (probably called blood knot because that's what you sweat when you're trying to tie it with the wind blowing and dark clouds gathering, as the biggest rise in history pocks the stream around you).

An alternative joining knot is the surgeon's and if it's good enough to tie you together, it should be good enough for fishing line. The two joining knots are about equal in strength; the blood knot looks neater.

You need to know two other knots—the nail knot to attach line to leader, and the improved clinch to tie on flies. There are several commercial methods of attaching line to leader with the advantage of a smoother joint. Harry Murray's *Fly Fishing for Smallmouth Bass* has an excellent section on leader-making, as well as outstanding Dave Whitlock illustrations of several knots.

There are other knots that are nice to know, but not critical. The Turle knot attaches down- or up-eye flies so they float properly. The Duncan loop permits good action by a fly and acts as a shock absorber.

So for a few bucks and with a little knot know-how, you can make several years' worth of your own leaders.

It may not rank with the Mona Lisa for creativity, but subduing a nice fish on a leader of your own design is a triumph worth experiencing.

Books with Useful Leader Information

Fly Fishing for Smallmouth Bass by Harry Murray (Nick Lyons Books, $17.95).

Fly Fishing for Bass Handbook by Dave Whitlock (Nick Lyons Books, $8.95).

Trout On A Fly by Lee Wulff (Nick Lyons Books, $15.95).

The Practical Fly Fisherman by A.J. McClane (Lyons and Burford, $15.95).

Fishing With Ray Bergman edited by Edward Janes (Knopf, out of print, but a classic with a good chapter on leaders—look for it in libraries or in used book stores).—*JMV*

Guide to Monofilament Sizes

The fishing line industry has made huge strides in increasing the strength-to-diameter ratio, so the chart is only a rough guide.—*JMV*

Size	Diameter	Tensile strength (pounds)
—	.021	35
—	.019	29
—	.017	23
—	.015	18
—	.013	15
0X	.011	13
1X	.010	11
2X	.009	9
3X	.008	6.5
4X	.007	5.5
5X	.006	4.4
6X	.005	3.2
7X	.004	2.4

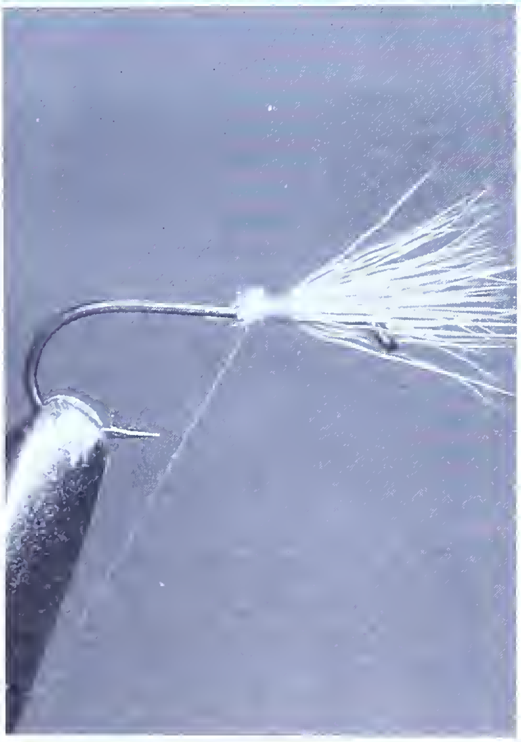
The Blonde Wulff

by Chauncy K. Lively

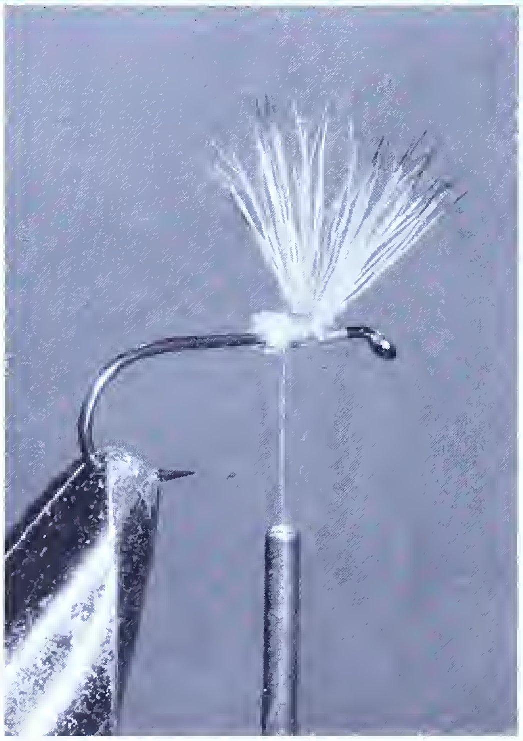
photos by the author

The late Lee Wulff was one of fly fishing's great innovators. To his credit is the contemporary concept of the multi-pocketed fly vest that many of us routinely load to the hilt with more gear than a platoon of anglers could use in a season. He refused to acknowledge the limitations others placed on fly fishing. He was a famous salmon fisherman, and many years ago, when the standard fly rods for Atlantic salmon were 15-foot double-handled arm-busters, he proved that these spectacular fish could be landed successfully with regular trout rods that were under nine feet long. Then he gradually went to shorter, lighter rods until his standard salmon rods were what we now regard as "flea rods." Then, as if to prove his point, he landed a salmon without a rod, using his forearm to cast line, leader and fly and to play the fish. His more recent exploits included catching a 10-pound salmon on a size 28 dry fly and a sailfish on a dry fly.

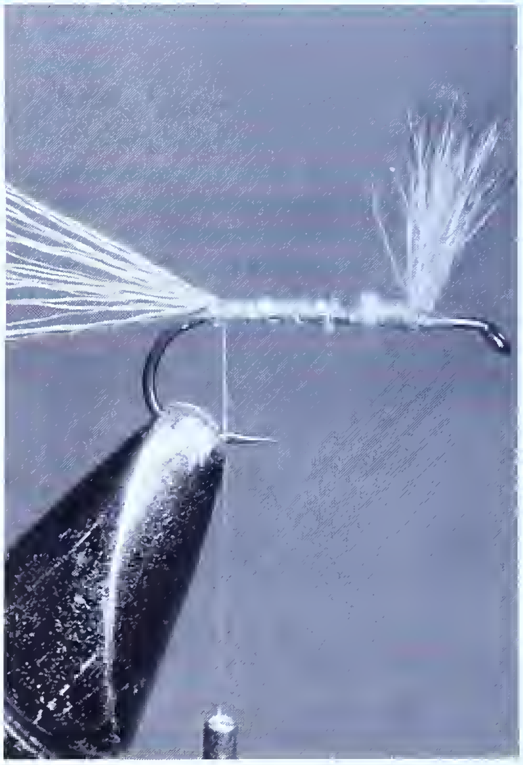
Despite his many angling accomplishments, Lee Wulff will probably be remembered most for his hairwing dry flies. They include the White Wulff, Gray Wulff, Royal Wulff (using a Royal Coachman body) and a more recent addition, the Blonde Wulff.



1 Tie in the thread about an eighth-inch behind the eye. For wings cut a bunch of elk hair and tie it in with the tips extending over the eye. The effective wing length should equal the shank length. Cut off the excess hair butts bluntly with a razor blade directly behind the windings.



2 Pull the hair upright and wind snugly in front of the hair to maintain its position. Split the hair into two equal bunches and wind the thread between them with criss-cross turns to set the wings in a "V."



3 For tails tie in a smaller bunch of elk hair butting the wing butts. The effective tail length (the hair extending behind the bend) should equal the shank length. Wind the thread over the hair back to the bend.

These patterns are characterized by hair wings, bushy tails of hair and extra-full hackling, all of which contribute to outstanding buoyancy. They became very popular when anglers discovered they would float in rough, tumbling water that quickly drowned ordinary flies.

Although Lee Wulff did much to popularize hairwing flies, it is doubtful he was the first to use hair as wing material for dries. I have several Paul Young catalogs dating back to the early 1930s, which list hairwing dry flies with a price of 95 cents per dozen. That's right, per dozen! Actually, the use of hair as winging in floating flies was a logical extension of its use in subsurface flies.

Tyers use various kinds of hair in the Wulff patterns. Deer hair is used commonly and calf tail hair enjoyed a period of popularity a few years ago. Currently, elk hair seems to be the hair of choice, and it is ideal for the Blonde Wulff. Whichever hair you choose, its texture should be relatively fine. Coarse deer body hair should be avoided because it tends to flare under pressure from the thread. By "coarse deer body hair" I mean the strawlike thick-stalked body hair commonly used in spinning bodies for clipped-hair bass bugs.

Even though the present trend in dry fly tails is toward split, widely spread filaments such as Microfibetts, the requirements of balance and realism in the Wulff patterns are less important than superior buoyancy. From this standpoint the bushy elk hair tails are an excellent choice. In the fast, rough water where these flies excel, trout have little time to scrutinize floating food carefully. Consequently, correct size and color are more important than minute details and anything that extends the fly's flotation in the bubbly is considered an asset.

The hackling of the Blonde Wulff should be bushier than that of the sparse dressings generally associated with flat-water use. I commonly use two genetic hackles in this pattern, but three imported hackles, which are somewhat shorter, also produce the correct density.

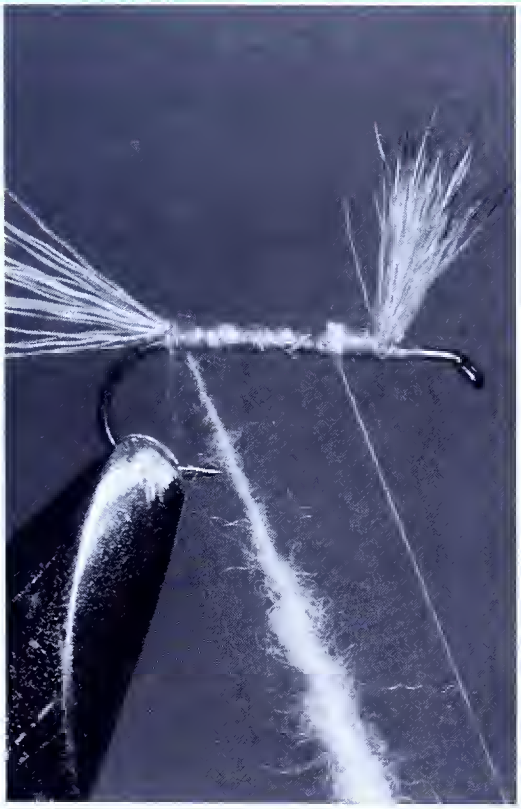
As with any multi-hackled fly, the hackling should follow a distinct procedure. Wind the first hackle uniformly, positioning all but the last one or two turns behind the wings. Then bring the hackle forward of the wings for the final turn(s). If the hook has a down-eye, tie off the hackle tip on top of the shank with two turns of thread. If the hook has an up-eye, tie it off below the shank. Then trim off the excess hackle tip. Wind the second hackle through the first, moving the hackle pliers back and forth laterally as you wind to avoid depressing the already wound hackle. Tie off as before and if a third hackle is used, simply follow the procedure of the second.

Because the Blonde Wulff is commonly used as an attractor pattern, there is little point in dressing it in small sizes. It is usually fished in sizes 12, 10 and larger. However, as if to contradict its reputation as a pure attractor fly, I know anglers who fish the Blonde Wulff during the Green Drake hatch and do very well.

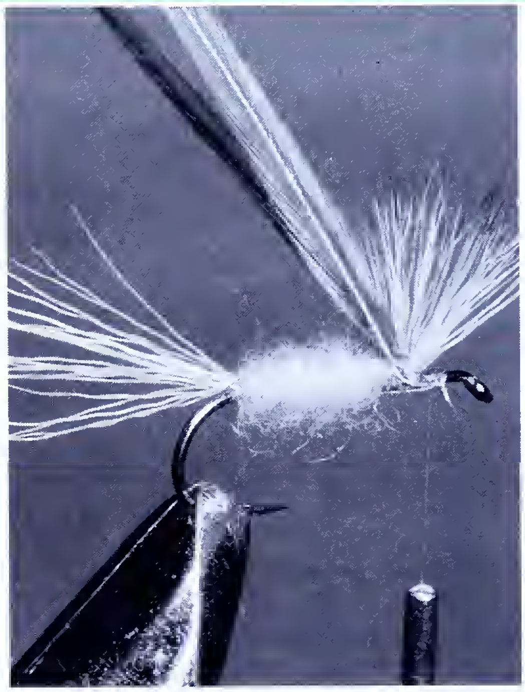
Fish the pattern as an attractor if you wish, but don't overlook its potential as a "match the hatch" fly for special conditions.

Dressing: Blonde Wulff

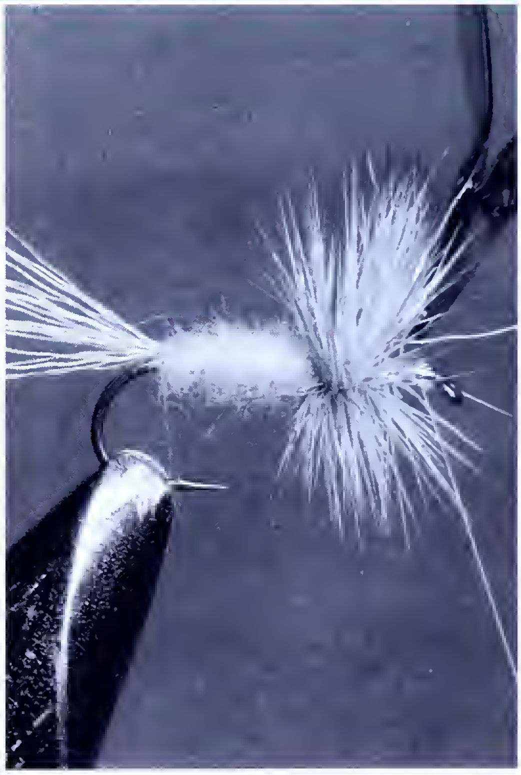
Thread: Tan 6/0 prewaxed.
Hook: Regular shank, size 12 or larger.
Wings: Tan elk body hair.
Tails: Tan elk body hair.
Body: Dubbed light-tan natural fur or synthetic.
Hackle: Two genetic or three imported ginger hackles.



4 Form a loop of thread and apply a moderately full dubbing. Secure the bottom of the loop with the hackle pliers and spin, twisting the dubbing. Wind the working thread forward to the wing butts.



5 Wind the dubbing to form a tapered body and tie it off at the wing butts. Trim the excess. Select hackles with barbules as long as 1 1/2 to 2 times the hook gape width. Tie in the hackles in front of the body, at right angles to the shank and with dull sides toward the eye. Bend the free hackle stems forward under the shank and bind them. The working thread should now be in front of the wings.



6 One by one, clamp the hackle pliers to the hackle tips and wind. Tie off each hackle behind the eye and trim the excess hackle tip. After all hackles are wound, make a neat head with the thread and whip finish. Apply lacquer to the head windings.

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To Save a Turtle

by Marcia Bonta

Joe McDonald

From a distance it looked like an overgrown cow pasture surrounded on all sides by new homes and cornfields. I felt a pang of disappointment as we parked the car and headed into the weedy margin beside a narrow stream, accompanied by the barking of neighborhood dogs and screaming blue jays. This was not the kind of remote environment in which I had expected to see what many biologists consider the rarest land turtle in North America—*Clemmys muhlenbergeii*—the bog turtle.

Tucked into a rapidly developing valley of rural Lancaster County, this 145-acre marsh purportedly contained the largest population of bog turtles in the world—900—according to estimates by herpetologist Dr. Carl Ernst. Ernst, co-author of the authoritative *Turtles of the United States*, studied all three eastern North American *Clemmys* species—wood, spotted and bog turtles—in Lancaster County from 1965 until 1988, and he knows most of the places where the bog turtle can still be found.

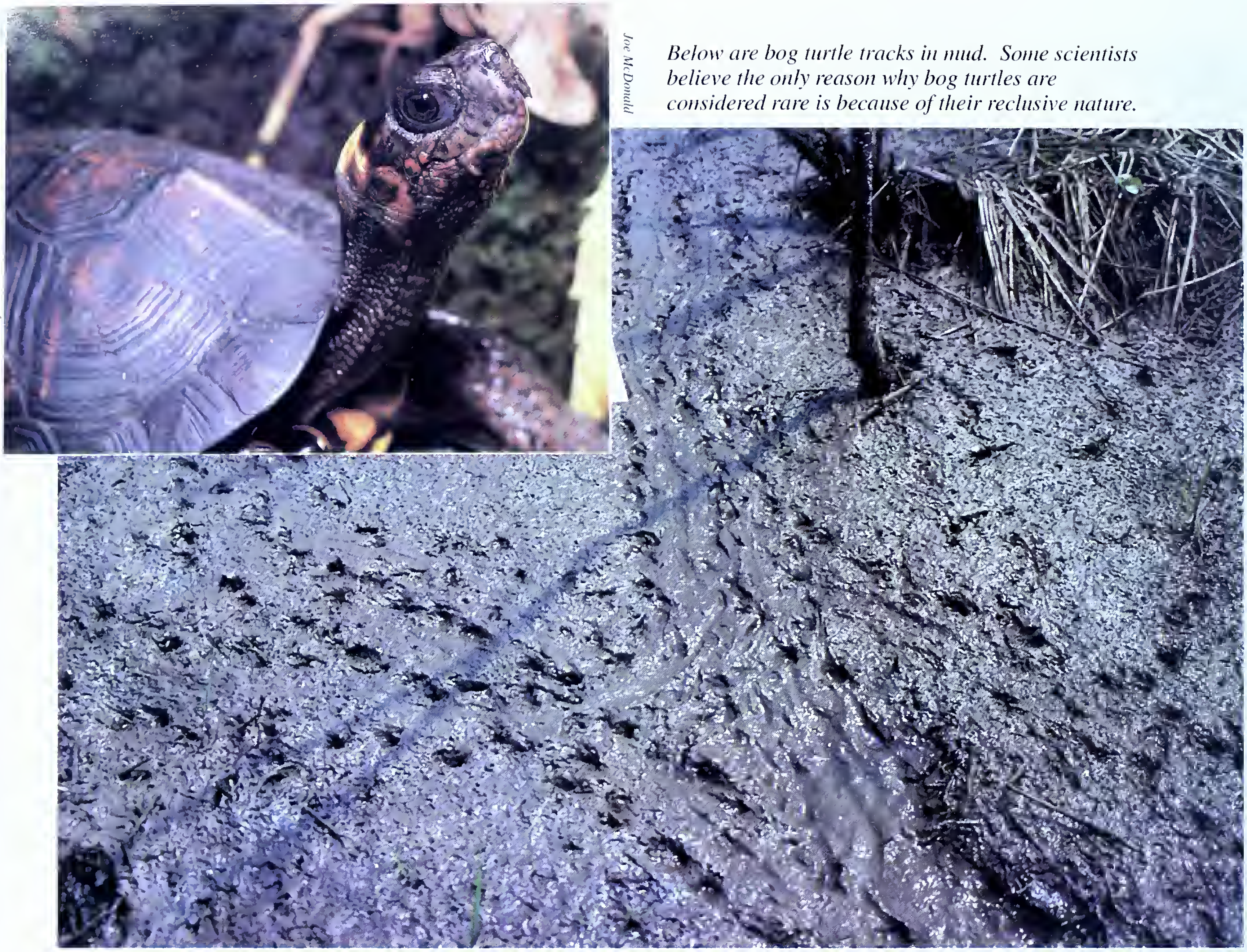
This particular tract of land was privately owned, as are many wetlands in Pennsylvania. But the owners were aware of what they had on their property and were determined to protect it from trespassers. For help they contacted the Pennsylvania chapter of the Nature Conservancy, a nationwide land conservation organization. The Nature Conservancy, in turn, began enlisting nine local landowners as conservation partners through its "Natural Areas Registry" program.

The Natural Areas Registry is an outgrowth of the continuing Pennsylvania Natural Diversity Inventory, a statewide biological survey that locates the Commonwealth's rarest and most threatened plants, animals and natural communities on both public and privately owned lands. When these areas are discovered, the owners are asked to register their property with the Nature Conservancy by agreeing to protect the rare species on their land, contacting the Conservancy about any threats to their property's rare species, and notifying the Conservancy in advance if they decide to sell or alter the use of their land.

Recently the Nature Conservancy purchased about half of the bog turtle marsh from a Natural Diversity Registry landowner and is currently negotiating to buy several additional properties. The major donor to the Conservancy for these acquisitions is Pennsylvania businessman Sarkis Acopian, hence, the name of the area we were exploring—the Acopian Preserve.

Roger Latham

Bog turtles live in sunny, humid wetlands containing soft-bottomed, meandering streams anywhere from sea level to 4,200 feet. Pennsylvania supports small populations in Lancaster County, Cumberland County and other locations.



Joe McDonald

Below are bog turtle tracks in mud. Some scientists believe the only reason why bog turtles are considered rare is because of their reclusive nature.

Roger Latham

You won't find the preserve on any map either now or in the future, though. The Conservancy has decided not to reveal its exact location because of the vulnerability of the bog turtle to collection by the pet trade and the openness of the site.

Accompanied by Roger Latham, the Conservancy's Director of Science and Stewardship, my husband and I had chosen a late, hot April day to search for and photograph emerging bog turtles at the Acopian Preserve. When we crossed the stream, we sank into sucking mud up to our ankles, exactly the kind of marshy meadow that bog turtles prefer.

We walked with our heads down, scanning the wetland for a glimpse of the four-and-a-half-inch-long turtle with its orange splotch beneath each eye. Latham pointed out tussocks of the common sedge *Carex stricta*, which build up a layer of organic material above the wet ground and provide protection from the heat and cold and sometimes overwintering sites for bog turtles. Occasionally we put our hands inside their hollowed-out interiors in search of the turtles, but for over an hour under the 90-degree sun we found no sign of them.

According to Ernst's studies, Pennsylvania bog turtles never emerge before 11 in the morning and we had arrived at the site shortly after 10. Ernst also believes that bog turtles need warmer weather than other land turtles before they become active, so they are usually back under tussocks of *Carex stricta* or buried in the mud by four in the afternoon. Other researchers in other states where bog turtles are found—Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina and Georgia—disagree about the need of bog turtles for warmer temperatures.

But then the life cycle of bog turtles, the reason for their spotty distribution, even the foods they eat, are still matters of debate among scientists because so little research has been done on them. Part of Sarkis Acopian's contribution will help fund an extensive bog turtle monitoring and research program on the site with special emphasis on its population numbers, age structures and diet. Another puzzle to scientists is why one site attracts bog turtles and another, which appears identical, has none.

Generally, bog turtles live in sunny, humid sphagnum bogs, swamps or marshy meadows containing soft-bottomed, meandering streams anywhere from sea level in New Jersey to 4,200 feet in the Appalachian Mountains of western North Carolina. Pennsylvania supports small populations in other eastern counties besides Lancaster, including a new locality recently discovered in Cumberland County as well as in northwestern Pennsylvania. In fact, some scientists believe that the only reason bog turtles are considered rare is because of their reclusive nature.

Finding bog turtles, even in a known site, is not easy. "And even if we do find one," Latham warned us as we slogged through the steaming marsh, "it will immediately dive into the mud, so be prepared." Actually, bog turtles have two methods to escape predators. One is a head-first plunge into the muck and the other has been described as the same sidewise "falling leaf" motion as that used by sidewinders (desert reptiles) to bury themselves in the sand.

So I was totally unprepared, at high noon, when Roger Latham suddenly grabbed a bog turtle plodding peacefully through the mud, leaving a distinctive trail behind it. There was dried mud on its dark-brown shell and it hissed as he picked it up, straining its orange-splotched, black head and paddling frantically in the air with its feet.

Latham declared it a female because of its distinctive shape—a higher and broader shell than the male—and after taking numerous photos of her while I held her inelegantly by the rim of her shell, he decided to risk putting her down on a natural setting for photography. Instead of diving into the mud or even escaping under a tussock, she obligingly posed for a long picture-taking session—the most cooperative bog turtle Latham had ever seen. I wondered if she was still groggy from hibernation or if she was waiting for a male to find her.

Mating occurs from late April until early June, shortly after emergence from hibernation on a warm April day. Three stages of courtship have been observed: sexual recognition, described by one researcher as males searching for and identifying secluded females, aggressive biting of the female by the male, and finally the mounting by the male while nipping her neck and hooking the claws of his four feet to her shell. Those are the barest scientific facts.

Once copulation is successful, on land or underwater, the female digs her nest in open areas of moss, tussock or moist ground and lays from one to five eggs. Whether she lays more than one clutch each year is not known. Incubation time has been recorded only in captivity—six to 10 weeks with an average of seven to eight weeks—but researchers have found wild hatchlings from mid-July to early September. Ernst discovered that Lancaster County hatchlings averaged a minuscule 22.9 mm in plastral shell length at birth and that they become sexually mature at 70 mm or between six and eight years of age.

But the hatchlings and adults alike face numerous predators such as raccoons, skunks, dogs and foxes. Their biggest threat, however, is humanity both as collectors and as destroyers of bog turtle habitat. Despite protection by law in Pennsylvania since 1972 and listing by the Fish Commission in 1977 as an endangered species in Pennsylvania, Clark Shiffer, Commission Herpetology and Endangered Species Coordinator, says that the Commission still has trouble with knowledgeable collectors who collect them for the pet trade and ignorant collectors who take them home as they would the common box or painted turtles, not knowing the difference and finding them to be the ideal size and temperament for pets.

For those reasons the Fish Commission has joined with the Nature Conservancy in helping to protect the bog turtles of the Acopian Preserve by agreeing to patrol the site for trespassers.

Nevertheless, the most important threat of all to bog turtles remains the loss of "useless" wetland habitat for purposes humanity has determined as more important—draining them for agriculture and development or using them as trash dumps and runoff basins. Latham pointed out to us that they have no idea what problems might arise for bog turtles from increasing development near the Acopian Preserve, although he did say that the land had been intensively farmed for 250 years without ill effects on the turtle population as far as they could determine.

To protect the bog turtle and its habitat remains a continual challenge to conservationists in every state where bog turtles are found. The joint project at the Acopian Preserve between the Nature Conservancy and the Fish Commission has set a positive precedent in bog turtle conservation efforts that I hope will be replicated in other places by similar groups. Perhaps if enough sites are protected and set aside for posterity, more people will be able to share the joy I felt that April day when I beheld my first bog turtle.

The Muhlenberg Connection

Pennsylvanians have a special reason for protecting the bog turtle. The first bog turtle was discovered in Lancaster County for botanist Gotthilf Heinrich Ernst Muhlenberg in 1778. For many years, it was known as Muhlenberg's turtle.

Muhlenberg himself came from an illustrious family whose father was known as the patriarch of the Lutheran Church in America and whose older brothers began their careers following in their father's footsteps only to be sidetracked by the Revolution and the forming of a new nation. His oldest brother Johann served as a major-general in the war and later was vice president of Pennsylvania as well as both a United States representative and senator in Congress. His second brother Friedrich was a member of the Continental Congress, and member and speaker of both the Pennsylvania House of Representatives and the United States House of Representatives.

Muhlenberg, of Muhlenberg turtle fame, also became a minister, first in Philadelphia assisting his father, and then, after the war, serving as the pastor at Holy Trinity Lutheran Church in Lancaster until his death 35 years later. Because of his brothers' political prominence, he twice fled from the British in 1776 and 1777 and lived in the country. It was then that he began his botanical work, specializing in grasses, mosses and lichens but collecting anything new and unusual that he found, including several bog turtles that he sent to the German scientist Schoeff who was in the United States as physician for the Hessian troops. From those specimens Schoeff described the new species in 1801, naming it *Testudo muhlenbergii*. The turtle was subsequently transferred to the exclusive North American genus *Clemmys* in 1835, but the species name *muhlenbergii* has been retained.

Muhlenberg's name is also prominent in many plant species. By 1791 he had collected more than 1,100 different plants in a three-mile circuit around Lancaster. He could walk 60 miles from Lancaster to Philadelphia without tiring while carrying an inkstand with pen and paper, a microscope, a box to hold his plants, and a few sheets of paper stitched together in a folio in which to press the plants he collected along the way. The journals he kept contained prepared descriptions not only of plants but of birds, minerals and other natural things. In 1813 he published a catalog of all known plants in the United States after trying, in vain, to get the help of other prominent botanists.

Many plants were also named for him, including a goldenrod *Solidago muhlenbergii*, a willow *Salix muhlenbergiana*, and an entire genus of grass *Muhlenbergia*. When naming the grass genus after him, Professor Schreber wrote, "...through the discovery of numerous new species and in other ways, [he] rendered immortal service to the natural history of North America, and especially to the knowledge of the plants of Pennsylvania and the other United States."—*MB*

MY CHECKBOOK, MY CREDIT CARDS, MY CABIN FEVER

BY ART MICHAELS

At an outdoor show a few years ago I began to perspire when I saw the deeply hued, finely crafted fly rods. I squinted upward, following their tips toward heaven. My pulse quickened. I leered at the accessories display, and in my imagination false cast fly lines whooshed above me. I machine-gunned every breath. When I opened my wallet, the black and green circles on the dollar bills became fly reels. Washington looked quickly to his right and left and motioned for me to come closer. Even after I shook my head and rubbed my eyes, he whispered, "Hey. Go ahead. Buy some more gear. Go ahead."

Trembling, I produced my checkbook and credit cards. My wife insisted that she saved me only seconds before I plunged past the point of no return. She ripped the checkbook and credit cards from my sweaty hands and stabbed me with a glare.

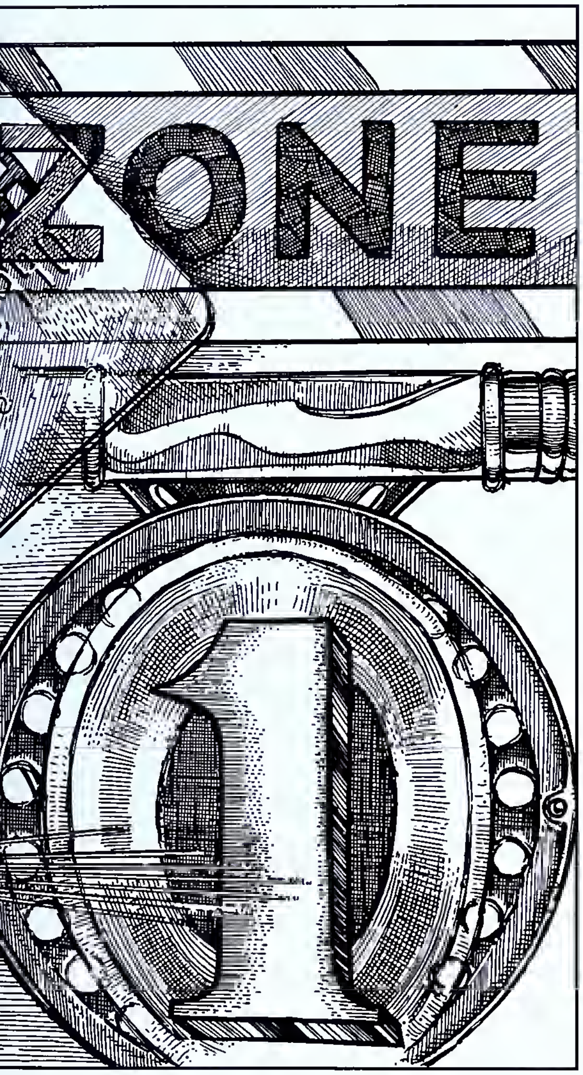
For the last few winters, my family, friends and bank loan officer have claimed that my cabin fever flared this way. The problem, they believe, is that I already owned eight fly rods, 12 fly reels, 15 lines and a room full of other fly fishing equipment. But every winter I bought more fly rods, fly reels, lines and rooms full of more tackle. By March 31 of each year I had sent my plastic money credit lines soaring to their limits and I had no money in the bank.

> ***Just because an avid fly fisherman owns fly rods, reels, lines and rooms full of tackle, that doesn't mean he shouldn't buy new gear every winter that he absolutely must have.***

The family, friends and bank loan officer called it a "financial-emotional disorder." I called it simply meeting my fly fishing needs. I couldn't survive the winter without buying gear that everyone insisted I didn't need.

Just because an avid fly fisherman owns fly rods, reels, lines and rooms full of tackle, that doesn't mean he shouldn't buy new gear that he absolutely must have. Every angler knows that.

The more they complained that I didn't need an item, the more I had to have it. The colder the winter and deeper the snow, the faster I wrote checks and flashed credit cards. The family said I "recovered" every April when the trout season opened, that I was happy with the equipment I already owned, and that my symptoms vanished until the next winter.



You can imagine the suffering I endured over the family's lack of understanding. To make them happy I tried just about everything during the past few winters to "beat the illness."

My wife and two children, seven-year-old daughter and 10-year-old son, kept reminding me of certain "danger zones" where they thought I was weakest—outdoor expos and fishing tackle shows. At first I tried faithfully to please my increasingly displeased family by giving myself a cure as often as possible in these places. I called this vital therapy "environmental overeating."

In spite of my gallant effort, at a sport show a few years ago the kids ushered me and a box of a dozen half-eaten doughnuts from a fly reel manufacturer's display. They lured me from this so-called "danger zone" by rhythmically raising their eyebrows and slowly waving a competitor manufacturer's catalog in front of me. Once more my wife captured the credit cards and checkbook from my sticky, chocolate-smeared hands.

I was determined to make everyone happy, so I took a different tack to effect a cure two Christmases ago. I wrote a Christmas list as if I'd won Pennsylvania Lotto. The list actually contained pages and pages of only small, affordable fly fishing items. This clever plan would let family members choose something that I'd like from an ample list, and it would let them feel helpful and take credit for what they would call my "recovery."

I could have gotten by with a few things from the list that would have occupied my attention long enough to let me survive February and March, the worst months, without my depleting the bank accounts and sprinting to the credit card limits. I felt sure that this plan would help everyone.

But when the moment of truth came, I reached under the Christmas tree and retrieved only packages of socks and underwear, neatly wrapped with my name on each box.

That winter, George Washington bellowed to me louder than ever, and I'm certain I heard Lincoln and Hamilton's voices, too. During a January snowfall I bought new waders and a new vest, an annual tradition I decided to begin that year.

Even though I gave in quickly then, I still tortured myself with constant environmental overeating therapy. I hoped that persistence and chocolate cream-filled doughnuts would get me past the wave of protests for a new pair of wading shoes I also just had to have.

I never lost faith. I struggled to stick with this therapy, demonstrating how much one person can sacrifice for his family.

During the entire outdoor sport show season that year I continued to demonstrate my forgiveness for the family Christmas blunder by buying yet another new fly rod and four fly lines. But immediately after I sprang for the new wading shoes, I realized I had to increase the environmental overeating therapy portions. So to my already strict regimen I added homemade brownies riddled with walnuts and chocolate chip cookies I made from scratch.

The family didn't warm up to any of this. Last year my wife and kids concocted a one-two-punch combination of still different, even stronger cures. Our bank accounts vanished by the end of March every year as a result of my alleged cabin fever. So my family emptied the accounts and wore out the credit cards just before Christmas. She and the kids bought a warehouse full of Nintendo games, every Barbie Doll and Barbie Doll accessory ever made, and expensive gardening equipment and supplies, all of which they neither wanted nor needed.

I complained that they'd caught the *real* illness. My wife said that their aim was to exhaust the fuel of my cabin fever. If a sickness has nothing to attack, they reasoned, it can't grow to damaging proportions.

The last prescription they ordered, I admit, also worked instantly and still keeps me in line. These days, while we walk the aisles of the outdoor shows, my wife reviews in detail the plan she and the kids devised to have her mother and my mother visit us for an unspecified length of time.

Oh boy, I thought at first, the victory is mine! My mother and mother-in-law's extended visits always include special recipes that mothers and mothers-in-law whip up for the sole purpose of pleasing their sons and sons-in-law. And the kids get all this lavish attention, too, which means there's nothing for me to do but go fishing. Great, I thought, bring 'em on! Here comes more great food and good times.

But before I could mold this idea into my plans for buying additional equipment, the family zapped me with the knockout punch. My wife said that if I so much as flash the checkbook or credit cards during an outdoor show, she'd implement the plan but forbid either parent to cook during the visit.

The whole family reminded me that my wife held in escrow the money for her mother and my mother's one-way plane tickets.

"*One-way* tickets?" I said, eyes bulging and mouth open.

I whined that I didn't know what she was talking about, and that my environmental overeating therapy was torture enough.

Then came still another zinger. She and the kids told me that the promise included no unauthorized trips to local bakeries for "unclaimed" birthday cakes, and—this *really* hurt—no unapproved treks to the concessions at Hershey Park's Chocolate World.

That did it. Nearly in tears I surrendered the credit cards and checkbook. I begged them on my knees to buy instead enough gardening equipment and Nintendo games and Barbie Dolls to fill a few more garages. They just stared into the distance with raised eyebrows, directing their victorious gazes two feet above my head.

All right already. I'm cured. I'm cured.

KIDS PAGE!

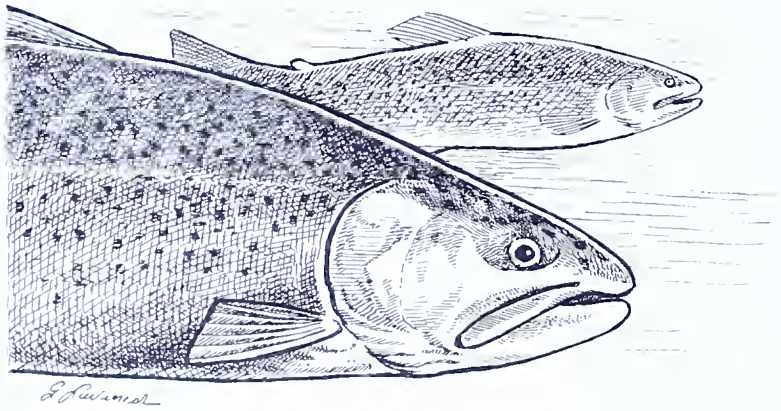
by Steve Ulsh

Two-Way Fish

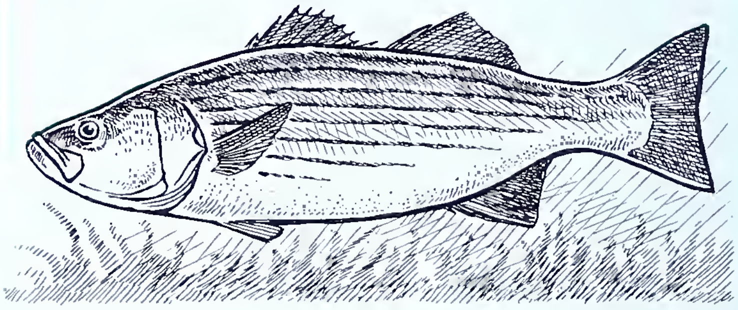
Anadromous (a-nad-ro-mus) and catadromous (ka-tad-ro-mus) are two big words. The dictionary defines them as going upstream and downstream to spawn.

Some examples of anadromous fish are Atlantic salmon, American shad and striped bass. These fish live in the ocean and migrate up rivers and streams to spawn. An example of a catadromous fish is the American eel. Catadromous fish live in streams and migrate to the oceans to spawn. All of them migrate, or move from place to place.

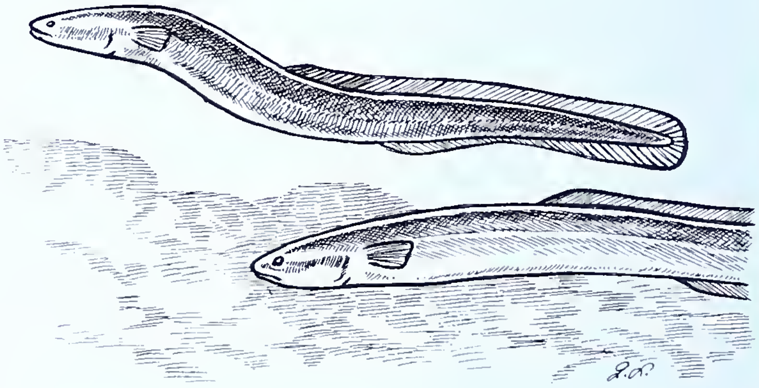
Atlantic salmon spawn in the fall. They migrate from the ocean to the upper reaches of freshwater streams to lay their eggs in nests or redds made by the female. After the young salmon hatch, they stay in the streams from one to three years. Young fish return to the sea for up to four years to grow and mature. As adults they return to the same stream in which they were born to spawn. There aren't any Atlantic salmon migrating into Pennsylvania.



American shad migrate up two Pennsylvania rivers, the Delaware and lower Susquehanna, in April or May. Returning fish weigh from two to eight pounds. The males are usually smaller than females. Unlike the Atlantic salmon, American shad use the main body of the river to spawn. The young fish migrate back to the Atlantic Ocean in the fall. They spend two to five years in the ocean, then return home to spawn.



Striped bass follow shad into freshwater rivers. In Pennsylvania, stripers migrate into the Delaware River. They don't go as far as shad. They spawn mostly in the lower portion of the river where fresh water and salt water begin to mix. The young fish spend a year or two feeding in the estuary before they join together, form into large schools and travel up and down the Atlantic coast.



The **American eel** migrates downstream to the Atlantic Ocean and spawns in the Sargasso Sea. After young eels, called elvers, are born, they begin to arrive along the coast in the spring. They measure from two to three-and-one-half inches long. It is believed that males stay in tidal marshes and bays while females migrate upstream. Each is slow-growing and can stay in streams for as many as 20 years. When females are ready to spawn they head downstream, join the waiting males and head to the ocean to start the next generation.

Migrating fish face many problems. Pollution and dams are the biggest. Dams with fish ladders can help fish migrate. Pollution is a serious problem. Large numbers of fish can be killed by pollutants entering streams and bays, especially during migration periods.

TO NET OR NOT TO NET?

BY DARL BLACK

With two hands gripping the rod, Mr. Professional Bass Angler hoisted the black bass over the gunwale and unceremoniously dropped the rod, reel and fish to the floor of the boat. With the two-pound bass flopping on the floor, Mr. Pro pinned it to the carpet, his hands compressing the body. He gripped the bass on the lower lip with a thumb and forefinger and held it up to the camera.

"That's how we land a bass! No net needed," he said, turning to his celebrity observer in the back of the boat. Then Mr. pro dropped the beat-up fish into the livewell to be released later, and the camera boat moved on to another tournament angler who went through a similar sequence landing another fish.

It was cable TV in a motel room. I never watch bass tournaments on TV at home, but it was a miserable winter morning in a distant city. I was killing time before the sport show opened where I was scheduled to present a seminar on how to catch bass. I also included details on how to land and release bass, and this "professional" method certainly wasn't on my list of approved techniques. It only took a few minutes to refresh my memory why I don't watch bass tournaments.

Mark Dauberman

Landing nets are outlawed in many national-level bass tournaments. "We release our fish; using nets will injure fish," is the standard response to inquiries about their net prohibition. It was hard to believe that the hoist-and-dump method was better for a bass than a net.

Controversy

Restrictions on landing nets certainly are not new. As I recall from reading very early Fish Commission annual reports, the landing net was a controversial item in the 1800s. At one time, the use of a net was not considered sporting, although the fish had been hooked and fought on rod and reel.

But views change. Today, according to Commission regulations, a gaff or landing net is permitted to land fish caught by legal device. However, nets of all types can be no larger than four feet, measured in any direction.

Pointed gaffs jabbed into the jaw or body area, without a doubt, are injurious to a fish's well-being and are therefore reserved for large toothy critters that the angler does not intend to release. Actually, in 30 some years of fishing, I have never seen anyone use a gaff on a freshwater fish.

But what about nets? With the emphasis today on catch-and-release fishing, there is a greater awareness of more and more anglers to return fish to the water in a healthy condition. Do nets help or hinder the safe and speedy release of a fish?

Does the use of a net help or hinder the safe, speedy release of a fish? Is grabbing a fish by its lower lip or around its middle a better option?

"Slimed"

There is a belief among some anglers that the use of a net in landing a fish removes the protective body slime. There is no argument that the slime coat is essential to preventing certain infections.

With the TV show fresh in my mind, later that afternoon I asked nationally known fishing writer and educator Spence Petros, to explain his views on landing nets.

"I use nets for salmon and trout most of the time because those fish don't have handles—you can't lip-grip them, and they are hard to grab," explained Petros. "On other fish, I don't use a net very often. For bass, I am almost always able to land them by the lower lip. For northern pike and musky I intend to release, I never use a net; I release them in the water using a wet, old welder's glove to hold the fish across the back while dislodging the hook with a hook-out tool. If you don't use a net, the percentage of fish surviving is much higher.

"And you do not want to grab a fish by the sides with dry hands. We have done this with fish in large tanks under controlled situations. Seven to 10 days later a fungus appears where you handled the fish, and most of these fish die in a couple of weeks," Petros concluded.

But do nets actually remove the slime coating? Lacking any known studies on the subject, I turned to fisheries biologists for an opinion.

Craig Billingsley is one of eight Fish Commission area fisheries managers. He is a biologist with extensive field experience.

"I think it would be easier on the fish to use a net," says Billingsley. "Many anglers have a tendency to hold the fish too tightly when grabbing it with the hand. The net is already wet, so loss of body slime isn't a concern. However, if the fish touches a dry surface, there is potential for infection."

"My thoughts vary depending on the species, and whether the intent is to harvest the fish or release the fish," says Richard A. Snyder, Chief of the Commission Division of Fisheries Management. "If it is a catch-and-release scenario, I support a release method that does not involve lifting the fish from the water. You must minimize any disruption of the body slime. On species such as bass and trout, anglers can generally twist the hook loose while the fish is in the water."

Regarding the possible removal of slime, Snyder acknowledges that some slime may be lost when using a net, however, he points out, the wet surface of a net is much less damaging than having the fish come into contact with a dry, gritty surface, such as the floor of a boat.

In addition to the slime removal question, there are other considerations when using a net. The large, open weave of nets may snag a gill cover. This could damage a gill, the most sensitive area of the fish. "If bleeding develops in the gill area, chances are that is a dead fish. That area usually does not heal," said Billingsley.

And there is a time element to consider. When a fish and lure are netted in a traditional landing net, the lure's hooks inevitably become entangled in the nylon or cotton mesh. This delays returning the fish to the water or placing it in the livewell, which leads to stress on the fish.

Still, given the hoist-and-flop-on-the-floor scenario or use of a net, there seems to be little question which is better in my mind.

So why do some tournament organizations disallow nets? I asked Don Troutman, tournament director for the Pennsylvania B.A.S.S. Chapter Federation. The state organization had been considering going to a "no net" rule because the pros do it that way.

"I believe that B.A.S.S. adopted the idea because it would be a more competitive atmosphere if each person would land his own fish. He would not be using his partner to net the fish for him. There was also some argument that the use of nets was harming the fish; but I know there are rubberized nets that probably minimize any kind of damage to fish.

"With regard to permitting a fish to flop around on the floor, I imagine that to be equally damaging," says Troutman. "I could not see how you could net a fish in a rubber net and say that was more damaging than flipping one to the floor and having it bounce off the console and tackle boxes."

Al Claypoole was the PA B.A.S.S. Federation official who recommended the "no net" rule after fishing a national tournament where he felt handicapped because of the net prohibition. "I think the original idea was to have the anglers lip their fish and bring them in so they were not mishandled with a net or on the floor. But we both know that isn't being done. You have too many people flipping the fish into the boat, with the fish bouncing all around," Claypoole says.

Lip-grip method

What is the "lipping" that Claypoole mentioned? It is simply using the thumb and forefinger in a pinching grip on the lower jaw of non-toothy fish, such as bass. With the thumb just inside the mouth and the first finger outside, the grip temporarily paralyzes the fish so that the lure can be removed. It is a landing method as old as bass fishing itself, and when executed quickly and properly, it is the least injurious technique of landing a fish. There is minimal contact, and as long as the hand is wet before touching the fish, slime removal is not a concern.

The lip-grip is fine for single-hook lures. But what about a fish with a multi-treble hook plug in its mouth? Claypoole summed it up for most of us. "I don't mind lipping a fish with a jig or spinnerbait in it's mouth, but when you have a whole bunch of treble hooks flopping back and forth in a thrashing fish, well, I don't like getting stuck," Claypoole says.

Net types

Is a net an answer? Perhaps, but make it a rubber net. A relatively recent development, the knotless, spongy rubber mesh landing nets are virtually tangle-free. Hooks do not become entangled in them, nor do fins or gill covers. Billingsley recommends the use of rubber nets, but Petros thinks there are drawbacks.

Having used rubber nets for nine years, I can readily identify potential problems. First, a rubber net is slower in the water—there is much more resistance when trying to sweep a fish into it. Second, the bag is shallow and very stretchy. Some fish may flip out. And small Esocids (pike and muskies) can poke their snouts through the mesh, stretching the rubber until the entire fish slides through the net. Finally, the rubber bag deteriorates after two or three seasons, so a new bag must be purchased. Nevertheless, in my opinion, the benefits of no-tangle rubber nets far outweigh the negatives.

So what about the toothy critters? Esocid size and sharp teeth present special problems for the catch-and-release angler. As mentioned, Petros releases them at boatside without any net. But Snyder points out that not all anglers are experienced enough to remove hooks from an Esocid without additional aides. Snyder suggests the use of a cradle net.

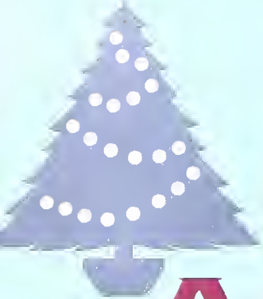
A cradle net is a fine-mesh or burlap bag strung between two four-foot poles. It looks very much like a minnow seine. This is a two-man operation, with one individual holding the cradle over the side while the other maneuvers the musky or pike into the net where the lure removal process begins. The fish is never removed from the water, and it is never doubled over, which would occur in a traditional landing net.

Snyder emphasized that the doubling or folding of large fish in a dip-type landing net can damage internal organs. For hook removal or pictures, he recommends that the fish, a bass, for instance, be supported with both hands, not held just from the lower lip.

All in all, for catch-and-release fishing, everyone agrees that releasing a fish without ever bringing it out of the water is best. The lip-grip is fine for species without teeth. And using the proper type of net—rubber mesh for bass, walleye and trout and a fine-mesh cradle for Esocids—certainly seems acceptable. Cotton twine or course nylon bag nets are the most abrasive, and they are prone to entanglements.

The method most likely to injure a fish or result in disease attacking the fish after release is unfortunately the technique too frequently seen on TV shows—flipping the fish into the boat and mishandling it. For all their catch-and-release encouragement, these professional anglers are caught in an instance of not practicing what they preach. Don't do the "pro hoist." Do it right so more of your released fish survive.

Darl Black



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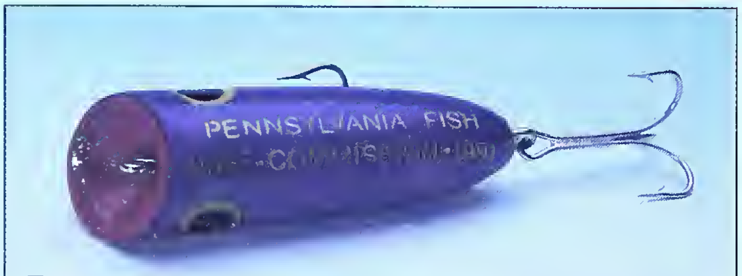

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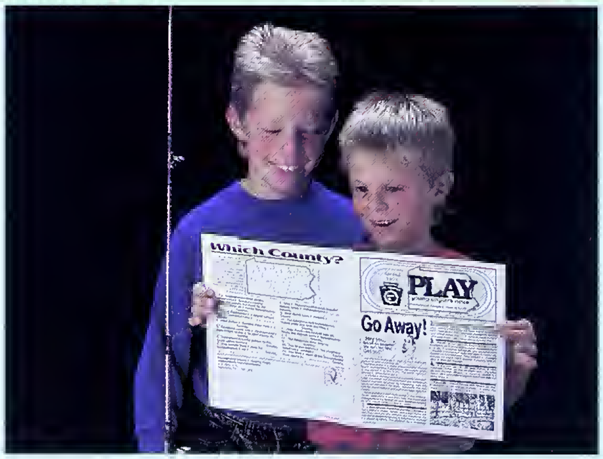
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(Please include a name and address for each child who is to receive a PLAY subscription—if a gift, let us know how to sign the gift card. ***Thanks!****)*

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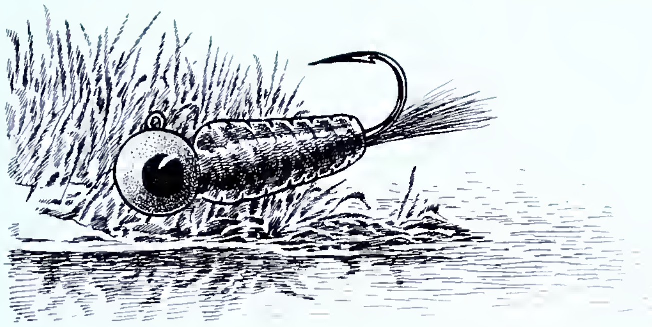
Enclose check or money order payable to ***Pennsylvania Fish Commission****, P.O. Box 1673, Harrisburg, PA 17105-1673.*
Orders received by December 10 will be mailed for delivery before Christmas.
This offer expires June 30, 1992.

ANGLERS CURRENTS

Dick Duffy (second from right), a member of the Fish Commission Volunteer Education and Information Corps, gives six-year-old Stacey Corel (lower left) a fishing lesson at the Farnsworth Trout Club's annual Family Fishing Day, in Sheffield, Warren County. The Farnsworth Trout Club has held Family Fishing Day for several years to show its appreciation for donated club work during the year. Accompanied by parents, friends and relatives, some 300 to 400 children register annually for the event.

Angler's Notebook

by Joe Reynolds



December is a prime month for big river smallmouth. Cast dark-colored jigs around backwaters and eddies close to shorelines.

Boat fishermen, especially those on big impoundments or rivers, should exercise extra caution when waters are cold. Hypothermia can kill, and a boating mishap could spell disaster. Most winter angling experts always fish with a partner as a safety measure.

Many anglers cover their boats with a waterproof tarp during the off-season. Make sure ventilation is adequate to avoid corrosion and fungus growth.

Make fly lines last longer with a wash in warm, soapy water. Rinse and dry them thoroughly. Then apply line dressing as recommended by the manufacturer.

Neoprene waders provide excellent insulation for cold-weather fishing. Chest-high neoprenes are also a better choice than hip models, even for wading shallow waters, when it comes to keeping warm.

Check deep-cycle boat batteries regularly during the winter. If such batteries remain in a discharged state for any length of time, they may not fully recharge and could become virtually useless.

Should an early freeze provide an opportunity for ice fishing, be extra careful on the new ice. Four inches is the generally accepted minimum ice depth for lone ice anglers.

Winter fly tyers can make popping bugs quickly with hooks, corks, deer hair and a hot-melt glue gun. Simply cut a slot in the cork, glue cork to the hook, and then glue a tuft of deer hair to the rear of the cork. Painting is optional.

This is the perfect time to clean and lubricate reels. After cleaning, store reels in air-tight plastic bags and they will be ready for next season. Reels needing repairs should be returned to the manufacturer now to ensure that they will be back in time for spring fishing.

Counting rings from a cross section of a tree trunk is a time-honored way to estimate tree age, but fishery biologists also count rings to determine the age of largemouth bass and other fish. The process involves counting and measuring rings of otoliths (ear bones).

Many angling experts agree that the improved clinch knot is perhaps the best knot for attaching monofilament line to a lure. Practice tying the improved clinch knot until you can attach a lure in less than 30 seconds.

Don't assume largemouth bass are found only in deep water during winter. Shallow areas attract fish after several days of warm sun, even if air temperatures are near freezing. Try small plastic worms worked slowly along the bottom of shallow coves near deep water or old creek beds.

illustration- George Lavanish

PENNSYLVANIA
FISH COMMISSION

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and the ideals of safe boating and optimum boating opportunities.

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MAIL

Comments on the Commission

This letter expresses our appreciation for the assistance we receive from members of your staff in Clean Water Act enforcement activities. We believe these efforts are successful only because of the cooperation we get from your staff.

In 1990, we settled over 30 cases jointly with your staff, with penalties ranging from $250 to $10,000 (averaging $1,000). The presence of your officers and their experience in dealing with controversial enforcement situations expedited the resolution of the cases.

The settlement agreements prepared by your officers also add a new dimension to enforcement efforts. In the past, monetary penalties have rarely been imposed for Clean Water Act violations and the current system of collecting federal penalties is sometimes unwieldy. However, settlement through the Commission is an efficient way of handling penalties. We believe that this cooperation not only saves time and effort on the part of the Service and the Fish Commission, but it also is in the best interest of the public.

The number of penalties handled by the Commission for wetland cases in the past year exceeded the total number of penalties handled by all agencies combined. This compares very favorably with about 150 cases settled nationwide by the EPA.

We have worked with your officers throughout the state and have had excellent cooperation from every district. However, three officers have been especially helpful. They are WCOs Jim Carter, Stan Plevyak and John Bowser. Mr. Carter has been at the forefront of the effort. He has worked on a number of difficult cases and is considered a leader in wetlands enforcement. His efforts have been previously recognized in letters from our agency as well as letters from the EPA. Much of his early work in this area was used as a model for work in other districts. He resolved cases under the Fish and Boat Code quickly, which would have taken the federal government months, perhaps years, to resolve.

WCO Plevyak also assisted us in resolving some difficult cases. For example, his filing criminal charges in the Robert Linke case was directly responsible for the timely resolution of the case and restoration of the affected wetlands.

WCO Bowser collected a $10,000 settlement in the Baldwin case in Erie and has been very aggressive in pursuing numerous other violations in western Erie County. He collected at least $10,000 in additional penalties for wetland violations in the past year. In addition, wetlands were restored, benefiting the resource.

The efforts of WCOs Carter, Plevyak and Bowser also resulted in an increased public awareness of the wetland laws and regulations in their areas. Although hard to quantify, we believe this awareness translates to fewer wetland violations, and hence, increased habitat benefits.

In addition to the WCOs, other officers made significant contributions to Clean Water Act enforcement efforts. The support of Ed Manhart, Jim Smith, and the regional supervisors has been vital to this cooperative effort.

I would like to thank you and your staff and all the officers who have worked with us in the past year for helping to make our program successful. I believe that what we have accomplished in the past year will result in a reduction in future wetland violations. Furthermore, I consider the Fish Commission to be one of our closest allies in habitat protection. My staff and I will continue to give our highest priority to working with you and your dedicated corps of officers in resolving problems of mutual concern.—*Charles J. Kulp, Supervisor, United States Department of the Interior, Fish and Wildlife Service, State College, PA.*

Comments on the *Angler*

You put out a dandy little magazine, and I admire the Pennsylvania Fish Commission. My only comment is that a limit of five or six trout should be enough for anyone. Keep up the good work!—*J. K. Smith, Yulan, NY.*

Helpful idea

I would like to pass along to *Pennsylvania Angler* readers something I started to do on my trout fishing trips that could benefit this great sport.

As part of my fishing attire I wear a plastic grocery bag on my wader belt. The plastic bag is used as a place to put other fishermen's litter that I pick up while I fish. Three short trips this year have yielded 13 trout, 12 beer and soda cans, six beer bottles plus several cigarette packages and styrofoam cups.

Hopefully, with more trout fishermen picking up the other guy's litter, big problems such as the loss of stream access because of "No Trespassing" signs could be averted. Other benefits would be that the beauty of our streams would not be desecrated and maybe the litterbugs would get the message to quit.—*Robert Winter, Warren, PA.*

Cheers for Chauncy

As soon as I get my issues of *Pennsylvania Angler*, I immediately look for the fly tying articles by Chauncy K. Lively. His photos are clear and concise, and he writes so simply that even I, a rank amateur tyer, can understand and tie a passable fly. Thank you, Chauncy.—*Alex R. Janecki, West Palm Beach, FL.*

***Editor's note:* Thank you for your kind comments. Chauncy K. Lively has been writing articles for *Pennsylvania Angler* since May 1953. He learned to tie flies in 1946 when the Joseph Horne Company, one of Pittsburgh's large department stores, offered a fly tying course. At that time, Bernard Horne, one of the store's owners, was a fish commissioner. He was probably responsible for the origination of the course.**

Sales tax on boats

I read with interest a recent "Currents" item called "Commonly Overlooked Boat Registration Issues." Particularly, "A Pennsylvania Use Tax is charged for any boat owned by a Pennsylvania resident if that boat is at any time brought into the Commonwealth regardless of where it is registered or used." I have placed several calls to the Fish Commission and Bureau of Boating, and I would like further or confirming information about this statement.

Could you please verify and give me some expanded information about this "use tax?"—*James Moersh, Bloomsburg, PA.*

The tax is commonly known as the "Pennsylvania Sales Tax." As you know, this tax is collected on all retail sales, with certain exceptions, in Pennsylvania. The complete title of the tax is the "Pennsylvania Sales and Use Tax." This means that the tax is due not only on items purchased in Pennsylvania but also on items purchased out of state and returned to Pennsylvania for use. This means that if you order something from a mail order catalog, sales and use tax is due when

you receive the item.

What does this mean to the boat buyer? If a Pennsylvania resident goes to Maryland and buys a boat, this individual will most likely pay the five percent Maryland tax at the time of purchase. When that boat is returned to Pennsylvania for registration, a one percent tax (the difference between the five percent tax paid to Maryland and the six percent due to the Pennsylvania) is payable. If the boat had been purchased in Delaware, where there is no sales tax, or an exemption was received in any other state, the entire six percent is due to Pennsylvania. The system is set up in such a way that the tax never has to be paid twice, but for a Pennsylvania resident who has a boat in Pennsylvania the tax must have been paid in some state.

The use tax also comes into play with boats registered in Delaware. Because Delaware does not charge a sales tax, some people have registered their boats there to avoid sales tax. The boats never see Delaware water, but this is difficult to prove. (By law, boats are to be registered in the state of principal use.) The use tax provision of the tax law states that regardless of where the boat is registered, once it is brought into Pennsylvania the six percent tax is due. Thus, if a tax enforcement officer sees a Delaware-registered boat in Pennsylvania, he will move to collect the six percent use tax.

I may have confused you even more with this explanation, but it is a complex subject. The bottom line, however, is that a six percent Sales and Use Tax is due for every boat purchased and brought into Pennsylvania by a Pennsylvania resident. The Fish Commission, by the way, does not receive any portion of this tax on boats.—*John F. Simmons, Director, Bureau of Boating.*

Rocky Mountains or the Poconos

I have been living in Wyoming for the past 10 years, but I am and always will be a transplanted native Pennsylvanian. My brother-in-law, who lives near Hershey, sent me a copy of the April *Pennsylvania Angler*. The article about opening day ("Savor Your Opening Day Memories," by Nick Sisley) brought back a host of wonderful memories.

Wyoming lakes and streams hold various species of trout, including Mackinaw (lake trout), cutthroat, brook, rainbow, brown and golden. Although Wyoming has different trout species and the two states are separated geographically by over 2,000 miles, the advice given in the articles "Time-Proven Lessons For Catching Trout With Bait," by Jeff Mulhollem, "Muddlers, Buggers, Weenies and Ghosts," by Charles R. Meck, and "Spinners For Early Season Trout," by Mark A. Nale, work just as effectively here. It doesn't seem to matter whether a trout is a golden in the Wind Rivers Mountain Range or a hatchery rainbow in Pennsylvania—sound tactics do work.

Unfortunately, Dave Wolf's "On The Water" commentary concerning those who ignore all ethical standards also holds true here. Once, while hiking in the Fitzpatrick Wilderness, I came across a beer can on the trail; I was over eight miles in the wilderness at the time.

Thank you for a fine magazine. Your articles are pertinent and valuable whether in the Rocky Mountains or the Poconos.—*Paul M. Petrucka, Rock Springs, WY.*

Fishing licenses and trout stamps make great gifts!

FISHING LICENSE APPLICATION
(PFC-L-118, Rev. 10-91)
PRINT PLAINLY

Pennsylvania Fish Commission
P.O. Box 1673
Harrisburg, PA 17105-1673

DATE ____________ FISHING LICENSE NO. ____________
(Official Use, Issuing Agent Only)

NAME ____________

STREET or R.F.D. ____________

CITY ____________ STATE ____________ ZIP ____________

BIRTHDATE mo. ____ day ____ yr. ____ HEIGHT ____ WEIGHT ____

AGE ____ SEX ____ EYES ____ HAIR ____

***OPTIONAL:** For survey purposes, what is your **HOME PHONE NUMBER**?* ____________

Resident of Pennsylvania?
☐ Yes ☐ No

CHECK THE LICENSE DESIRED

☐ Resident **$12.00**
☐ Resident Senior.......................... **2.00**
☐ Non-Resident............................ **20.00**
☐ 7-Day Tourist............................ **15.00**
Valid from ________ to ________
☐ Trout/Salmon Stamp.................. **5.00**
(Add 50 ¢ Agent Fee to Each Item Above)
☐ *Resident Disabled War Veteran
Claim No. ....Free
*Available only from County Treasurers

Applicant must establish identity, age, and the fact that he or she is a bona fide resident of this Commonwealth to the satisfaction of the issuing agent.
Type of ID ____________
I certify the above to be a true and accurate statement.
APPLICANT'S SIGNATURE
____

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Enclose no money, you will be billed later.
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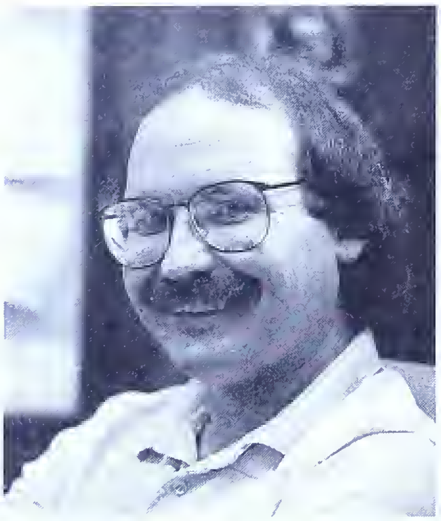
BACKTALK

Argue with the Commission. Applaud us. Advise us. The Commission invites you to write letters to the editor in this space if you have an idea on *Pennsylvania Angler* content, a question about the Fish Commission or about fish and fishing, or a helpful idea for anglers or boaters. Address correspondence to: The Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673. The Commission considers only signed correspondence for publication and response, and letters are edited for clarity and space considerations.



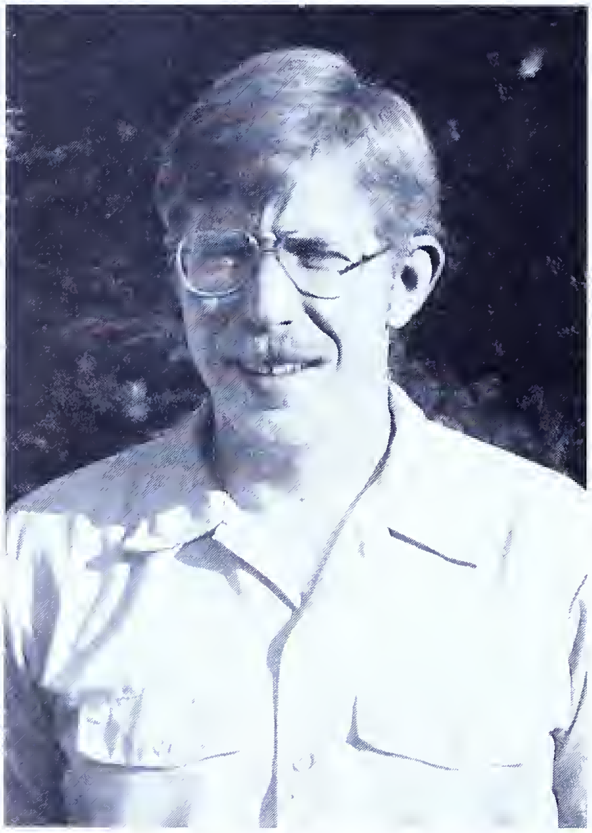
Art Michaels

Meet John Arway, Chief of the Commission Environmental Services Division. John and his staff coordinate the Commission's resource protection and impact assessment. They review over 2,500 permit applications per year and provide comments to various state and federal regulatory agencies that are responsible for ensuring environmental protection. John assists the Commission's Bureau of Law Enforcement in assessing damages resulting from major pollutions and watershed disturbances, and he provides expert testimony at civil, criminal and administrative hearings. He's been a Commission employee since 1980.

Young Receives Award

Last June Fish Commission fisheries biologist Leroy Young received a certificate of appreciation from Harry B. Miller, recording secretary of the Pennsylvania Sportsmen for the Disabled at the organization's First Annual Awards Dinner. Young is the coordinator of hydropower license reviews for the Commission. He reviews design plans for angler access areas that are required to be built at newly constructed hydropower facilities. Young confirms that these access areas are accessible to the disabled angler.

The Pennsylvania Sportsmen for the Disabled is an organization devoted to promoting and gaining access to hunting and fishing facilities across Pennsylvania for the handicapped, blind and disabled outdoor sportsmen.



Karl Lutz

Leroy Young

New Commissioners

Confirmed on July 11, 1991, the new Fish commissioners are James Biery, Jr., from Swatara, and Paul Mahon, from Clarks Green. Biery replaces Leonard Green, from Carlisle, and Mahon replaces David Coe, from State College. Commissioner T.T. Metzger, from Johnstown, also received an eight-year reappointment.

Commissioner Biery graduated magna cum laude from Muhlenberg College, and he holds a masters degree from Temple University. He is a veteran of World War II and the Korean War. He is a past president of the Pennsylvania Federation of Sportsmen's Clubs (PFSC), and has served as PFSC liaison for the Fish and Game commissions.

Commissioner Mahon currently serves on the Red Cross Board of Directors and the Multiple Sclerosis Society Board of Directors. He is a veteran of the Korean War, and a recipient of the Benjamin Rush Award for outstanding efforts for the health and welfare of people in Lackawanna County. He is also a volunteer for the preseason and in-season spring trout stocking program.—*Ann Kreisler.*

Big Uncle Day

The 25th annual Big Uncle Day, held June 1, 1991, in Venango County, provided the physically and mentally disabled a fun-filled day of fishing with other activities. Sponsored by the Venango County Federation of Sportsmen's Clubs, Inc., members served as "Big Aunts and Uncles" for over 125 adults and children from county chapters of the Easter Seal Society, the Muscular Dystrophy Association, the Venango County Association for the Retarded Children and Adults, and the Polk Center. Local businesses and a host of community volunteers were also on hand.

Boating Pamphlet

The Keystone Aquatic Club publishes an informative pamphlet titled Susquehanna River & Harrisburg City Island Boating and Safety Guide. The pamphlet describes the Harrisburg area of the Susquehanna, and it includes sections on general boating safety and emergency information with detailed illustrations. To receive this free pamphlet, contact the Keystone Aquatic Club, c/o Steve and Jen Boyer, 130 South Front Street, Wormleysburg, PA 17043.

Notice to Subscribers

Act 1982-88 provides that certain records of the Pennsylvania Fish Commission are not public records for purposes of the Right-to-Know Law. This means that the Fish Commission can place appropriate conditions on the release of such records. The Commission has decided to make the subscriber list for *Pennsylvania Angler* available to statewide nonprofit, nonpartisan fishing, boating, and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do NOT want your name and address included on the subscriber mailing list to be made available to the described organizations, you MUST notify the Commission in writing before January 1, 1992. Send a postcard or letter stating, "Please exclude my name and address from *Pennsylvania Angler*'s subscriber mailing list." Send these notifications to Art Michaels, Editor, *Pennsylvania Angler*, P.O. Box 1673, Harrisburg, PA 17105-1673.

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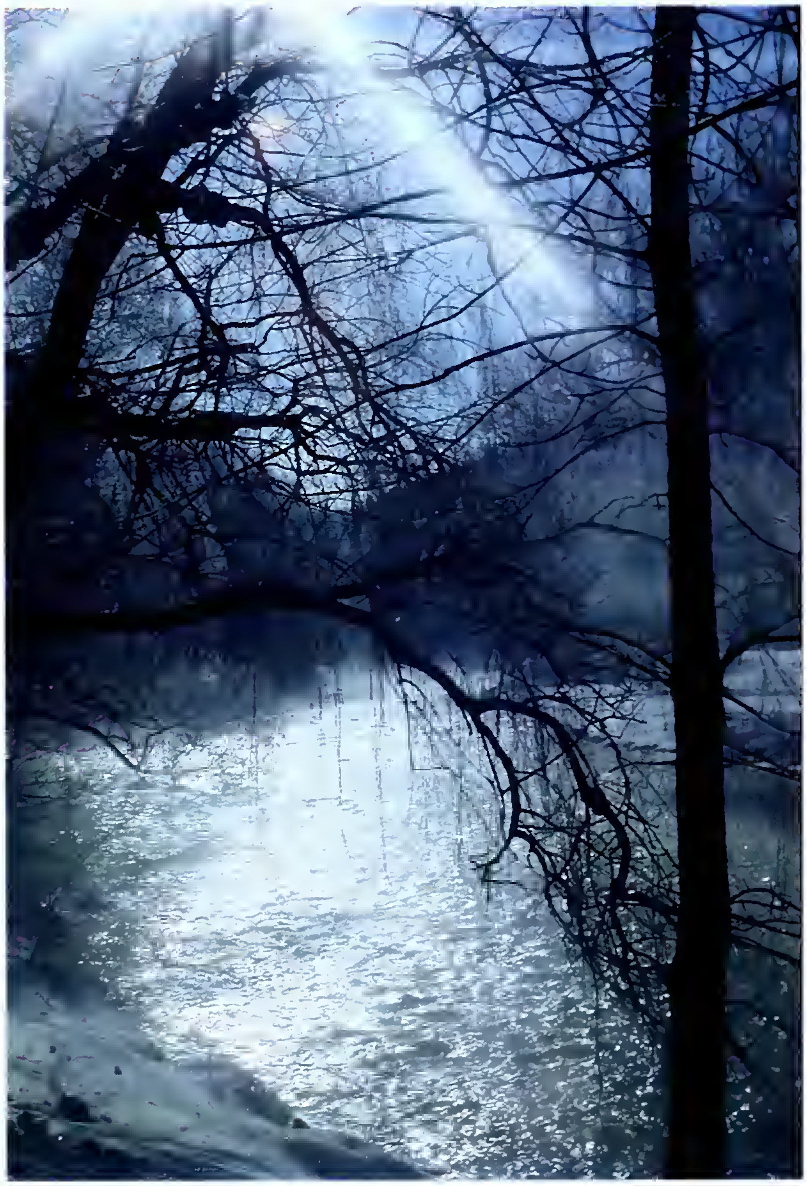
On the Water

with Dave Wolf

A Gift to Behold



Russ Gettig

The snow is falling softly, seen through the picture window that overlooks the lake and the "run" that holds trout all year long. I remove myself from the social gathering of friends and relatives and peer from the window. The memories of the trout taken from the icy cold waters flood my mind, and I am at once thankful for the past year—for the environs where trout are found and for the technology and writings that have led to my capturing these wild and wonderful creatures.

Canada geese have decided to winter over here. They float on the lake with their heads tucked beneath their wings. Mallards join them in the small flotilla and the world seems at peace. The others with me share the appreciation of the beauty that may be viewed from the window, but most do not fish and cannot fully appreciate the feelings that well up inside me.

There are brightly wrapped presents beneath the tree—some for show, some because of an obligation that must be met. Many will be returned for a refund within the week. Others may be long-lasting treasures. But I need no gifts, for throughout the year I have had more than my share. As I view the lake below I recall my daughter taking plump stocked trout from the waters there. Never mind that she was far more content casting a spinner than catching trout on a worm. The worm technique, although extremely productive, required a bobber and a nightcrawler...and waiting. I recall the day she took six trout in 15 minutes using a worm. I was excited, she was not.

"Can I cast a spinner again?" she asked. We spent the rest of the time walking streams, with her casting spinners that I continually retrieved from sticks, logs and every piece of vegetation that grew along the streams, from blades of grass to giant oaks. I allowed her to play the fish I caught on a fly rod and tried to bestow the credit on her. She would not allow it. "No, you caught the fish," she would state flatly and without expression. "Well, you played and landed it," I would counter. "Don't matter, you caught it."

Eight-year-olds have a way of ending arguments, leaving little room for counterpoint. They know what is right and wrong and they don't plan in advance; no trying to outthink those who confront them. They win with pure, straight-out honesty and no beating around the bush.

At the end of the run is some of my favorite trout water, and from there I took more than my license dollar and trout stamp's worth. I creeled none, but not creeling the fish does not mean one does not reap the benefits of fishing.

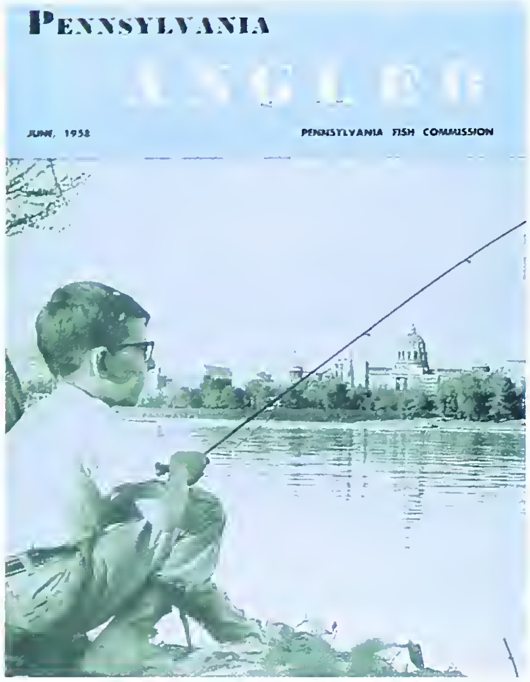
I turned from the window and thought of the private conversations I had with so many different folks on the subject of fishing—all thought-provoking and enjoyable. I thought, too, of places farther from home: Penns Creek, Kettle, Spring Creek, Spruce, Cedar Run, Honey Run and the upper Delaware, to name a few. I recalled the large walleye of Lake Erie and the steelhead and coho that run in its tributaries. The stripers, muskies, bass, channel catfish, shad and perhaps my favorite, the brook trout, are found in those babbling brooks that make one feel as if he is the first angler to tread there.

No, the year was not a fun-filled vacation. There were many heart-rending, soul-searching days filled with stress and anxiety, some filled with crisis, others with bad news that is difficult to cope with. There were days when I wanted to throw my arms in the air in pure disgust. Some of those days are long forgotten, taken away with a single upward sweep of a rod with a fish attached, but others will be with me forever.

My days of fishing hold the finest memories I know, full of warm, sun-filled days and ending with sunsets that will be etched in my mind forever. Memories that have been suspended in my mind, held there to be quickly relived at a moment's notice. I find my peace on the water and at the water's edge. I'm overwhelmed by it all, the beauty of the places where water is found and of all the creatures great and small it attracts.

My mind is brought back to the festive activities and the social gathering I had removed myself from. "Open your presents," I am told. Little did they know I already had.

The Keystone State's Official Fishing Magazine



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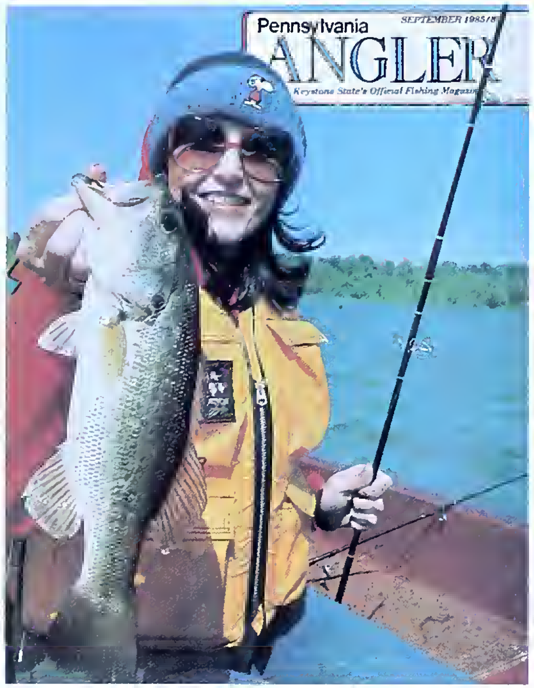

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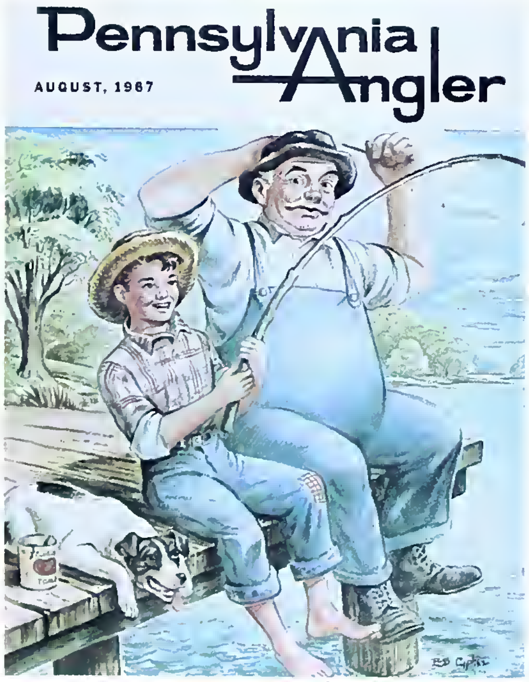

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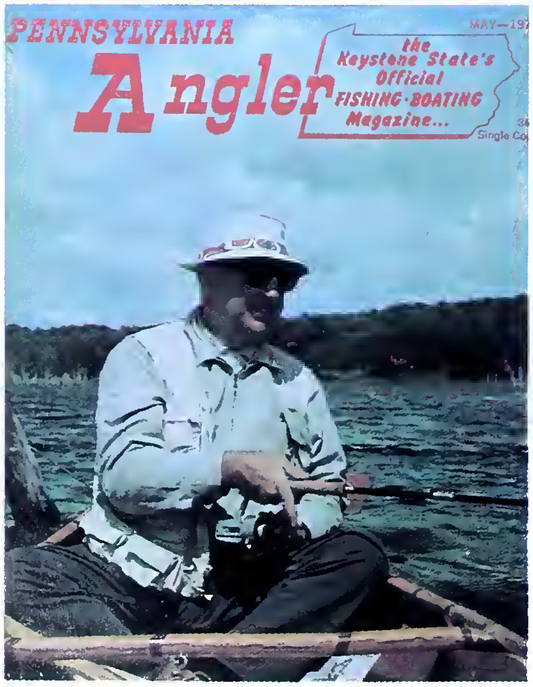

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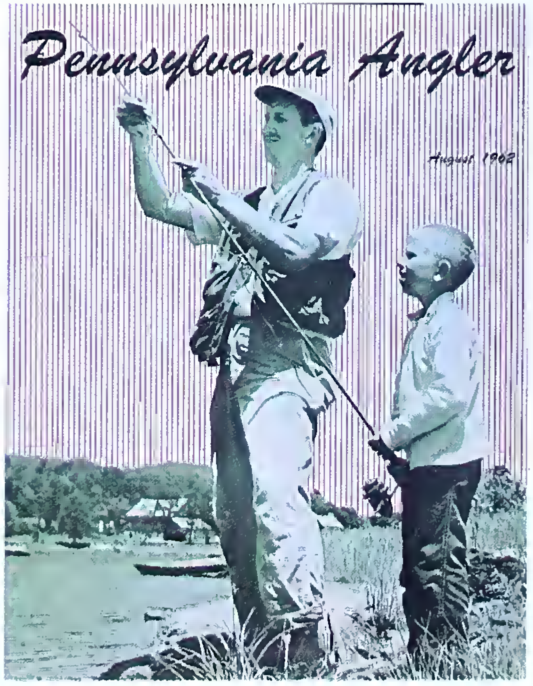

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